THE DENTAL Digest

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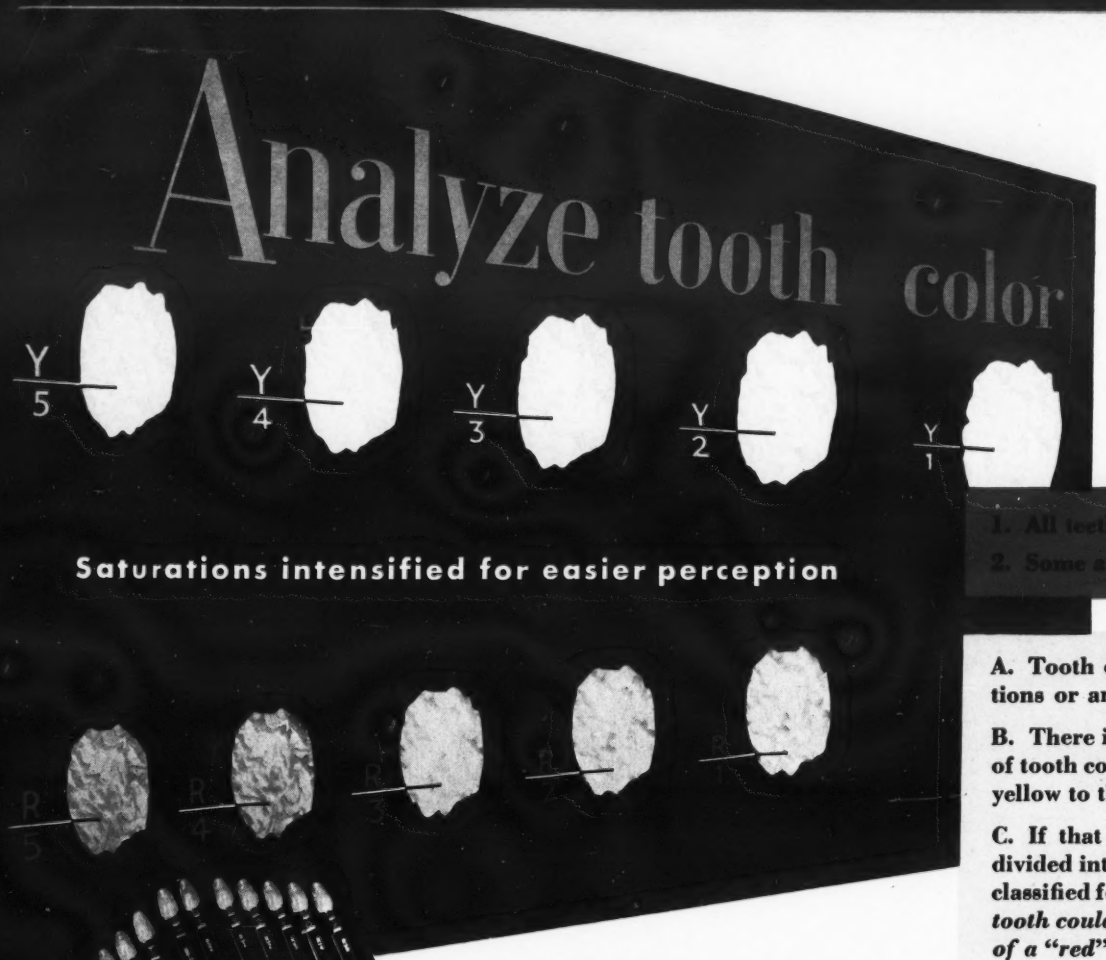
Analyze tooth color by system...

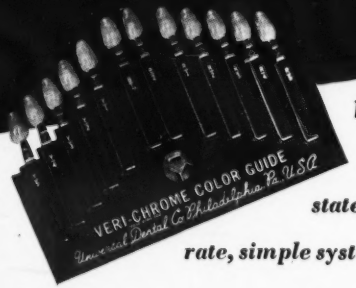


1. All teeth are basically yellow (pigment) in color.
2. Some are tinged or modified with red (pigment).

A. Tooth colors can be classified according to the saturations or amounts of pigment they contain.

B. There is a *range of pigmentation* between the extremes of tooth color (for example, from the most intense "tooth" yellow to the lightest yellow occurring in human teeth.

C. If that range of yellow pigmentation were to be subdivided into five distinct degrees of saturation scientifically classified for example as Y1, Y2, Y3, Y4, and Y5, *any human tooth could be accurately matched to one of them or to one of a "red" series.* (Modified by a tinge of red pigment.)



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THE DENTAL Digest

VOL. 49 NO. 5

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Jerome M. Schweitzer, D.D.S. (New York University College of Dentistry, 1918; B.S., College of the City of New York, 1927) presents another of his extensive restorative cases which have interested our readers for years.

Louis Jerome Pereira, Jr. has his D.D.S. from New York University College of Dentistry and is likewise a general practitioner. Doctor Pereira presents his experience with the local application of sulfanilamide.

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Preventive Orthodontia for the General Practitioner

FRED ROTHENBERG, D.D.S., New York City

DIGEST

Orthodontia should not be practiced by the general practitioner unless a thorough training of at least one year at an academic institution qualifies him to undertake such treatment.

Knowledge of the normal growth and development of the masticatory apparatus should be acquired by every dentist inasmuch as the dentist in general practice is in a position to observe by his periodic examination of child patients any deviation from the norm. The dentist can provide a real service in preventing a malocclusion; or he can draw the parent's attention to it and advise the proper treatment.

The general practitioner should watch for any disturbances due to mechanical interference with normal growth and development involving the position of the teeth. These are: habits, posture, premature loss of teeth, too long retention of teeth, congenitally missing teeth, supernumerary teeth, abnormal or pathologic structures around the masticatory apparatus, and impacted or retained teeth.

The dentist can practice preventive orthodontia by the construction of a space maintainer in cases of premature loss of foundation teeth or the first permanent molar.

It is the dentist's responsibility to make a complete roentgenographic examination for all child patients. Many of the causes which might lead to malocclusion at a later state of development can thus be detected early enough to be prevented. Many cases can be remedied by simple treatment given by the general practitioner; many other cases can be remedied faster and more simply by the orthodontist if they are brought to his attention and to the attention of the parents at the incipient stage; thus the general practitioner is able to save the patient unnecessary discomfort, unnecessary disfiguration, and unnecessary expense.

THE PREVENTION of malocclusion or irregularity of the teeth becomes increasingly important with the growing interest of the general public in the health of the oral cavity.

Is the dentist capable of doing for the patient who comes to his office the orthodontia that he finds ought to be done? It is said that orthodontia is dentistry and, therefore, should be practiced by the dentist; however, this is not entirely true. Undergraduate education in orthodontia gives the dentist some ideas about the problems involved and teaches him the fundamentals about the growth and development of the face and jaws, but does not fit him to practice orthodontia as a graduate dentist. Certainly the practice of orthodontia demands a full training in its science which takes a person at least a full year of study to acquire.

There is a field for the general practitioner, however, with regard to orthodontics for which he receives ample training during his years of study. It is the recognition of causes and factors leading to a malocclusion, which, if detected early, can be prevented or easily cured.

Modern dentistry is concerning with the prevention of caries rat than with the cure of caries; with t prevention of losing teeth rather th with the replacement of lost teeth. Ev though dental diseases, such as ca and alveolar bone destruction, are present to a large extent in most of adult population, our knowledge of trition and our advanced dental t niques make it possible today to su vise the oral cavity to such a degree tha caries can be kept at a minimum and extensive loss of teeth can frequently be prevented. To accomplish this, it i necessary to start the dental examina tion at the age of 3 years and to con tinue to do so every six months there after. This constant supervision gives the general practitioner an excellent opportunity to observe the normal functional growth and development of the face, jaws, and the masticatory apparatus as a whole from childhood to manhood. It is his responsibility to be able to recognize any deviations from the normal development, to see the cause for the deviation, and either treat the condition and thus arrest a malocclusion in its incipient stage, or refer the patient to a specialist for proper diagnosis and treatment.

In order to accomplish this, the dentist in general practice must have a thorough understanding of what is con

dered to be the normal growth and development of the teeth, the jaws, and associated structures (Fig. 1).

Interference with the normal growth and development from whatever source is the real cause of malocclusion, and an existing abnormality in the mouth is rarely the result of recent interference with occlusal adjustment. It is more probably a disturbance covering a period of time in the growth and developmental cycle (Fig. 2).

Etiologic Factors in Malocclusion

The etiologic factors in malocclusion are: (1) disturbances due to mechanical interference with normal growth and development, involving the position of the teeth; (2) disturbances due to nutrition and endocrine diseases; (3) heredity.

The general practitioner is able to prevent many of the disturbances that interfere mechanically with normal growth and development. These disturbances are: habits, posture, premature loss of teeth, too long retention of teeth, congenitally missing teeth, supernumerary teeth, abnormal or pathologic structures around the masticatory apparatus.

This article is concerned only with the recognition and treatment of these mechanical disturbances.

Foundation Teeth

The deciduous teeth are considered to be extremely important in building the proper foundation for the permanent teeth; therefore a new name has been given them which expresses their real value: foundation teeth. The functions of the foundation teeth are many, but one of their prime functions is to keep the space open for the succeeding permanent teeth, until they are ready to erupt. If we succeed in keeping the foundation teeth in their position by constant supervision, we help a great deal toward building a healthier and better functioning permanent set of teeth; thus we practice prevention of malocclusion.

At the age of 3 when the foundation denture is at its fullest development, the second foundation molar stands under the malar process of the maxillary bone,

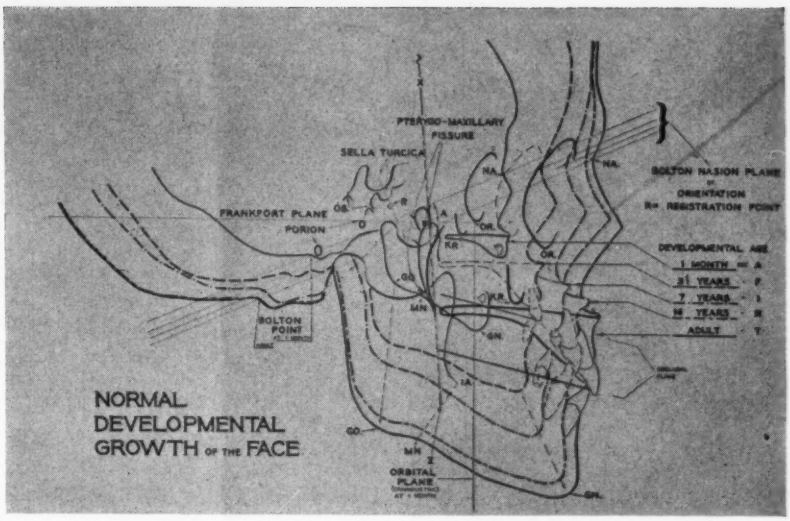
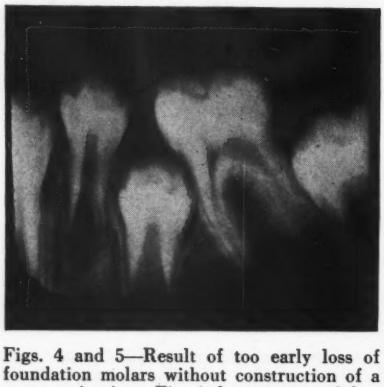


Fig. 1—Chart of normal dento-facial developmental growth from Bolton study records. Key: GN, Gnathion; CO, conion; IA, international angle of the mandible; KR, key ridge; MN, mandibular notch; NA, nasion; OR, orbitale; OS, occipito-sphenoidal suture; A, F, I, R, T refer to corresponding developing dental patterns (Broadbent).

Fig. 2—Three sets of bite-wing roentgenograms for a child, aged 7. The patient had the upper right second foundation molar removed. Parents were advised to have a space maintainer constructed. The right side now has a malocclusion, class II. A space maintainer would have prevented this condition.

Fig. 3—The patient was a girl, aged 5½ years. The lower first foundation molar had to be removed. Space maintainer was constructed four weeks after extraction.

Fig. 4



Figs. 4 and 5—Result of too early loss of foundation molars without construction of a space maintainer. Fig. 4 shows impacted first bicuspid. Fig. 5 shows how the lower first right molar has moved forward and how the lower second bicuspid is wedged in between the teeth.

called by Atkinson[1] "the key ridge." It is a well marked prominence, rising from the alveolar process and blending into the malar or zygomatic arch. The permanent upper molars, developing in the jaw, are strung backward, upward, and outward, around the maxillary tuberosities. The lower molars are strung backward and upward in the rami of the mandible. As the jaws develop, the teeth move forward and downward until, at 18 years of age, the first permanent molar's mesial root stands under the malar process.

This downward and forward growth of the dentition is guided between the balanced pressure of the tongue on the inside and the cheeks on the outside. It takes place against the restraining influence of the closed lips. All malocclusions are caused by some abnormal influence on this downward and forward growth of the dentition and the face.

From birth to maturity the structures of the jaws are constantly changing; even throughout life the jaws continue to show changes. Occlusion is not a static position, but an ever changing one; therefore the dentist's responsibility to the child patient does not stop with restoring teeth and cleaning and polishing them, but it also involves planning for the future, thus he can greatly increase the value of his services and prevent many cases of malocclusion from reaching advanced stages.

Any advanced cases caused by local mechanical disturbances directly involving the position of the teeth should be referred to an orthodontist and also all treatment for advanced conditions should be left to the orthodontist. In

Fig. 6—Congenital absence of lower right permanent incisor in a girl, aged 11½ years. Because of this absence, the permanent cuspid in its developmental stage was lying too far mesially. Root of foundation cuspid was insufficiently resorbed and entire tooth was pushed labially when the cuspid erupted lingually and slightly mesially.

Fig. 7—(Same case) Both upper foundation cuspids hardly resorbed. Permanent cuspids lying lingually and too far mesially. Upper left permanent cuspid is pushing left lateral incisor labially and distally.

educating the patient's parents about the harm that might result from advanced cases of malocclusion if left uncorrected, the dentist should not only stress the esthetic value and beautifying aspect of such a correction, but also the preventive value of such treatment with regard to future occurrence of caries and periodontal disease.

Abnormal Habits

Local mechanical disturbances are brought about by abnormal habits. We might call them deflecting influences which unbalance the internal and external pressure on the growing dentition. The most common of these are thumb-sucking or finger-sucking with which are frequently associated other

[1]Atkinson, S. R.: The Strategy of Orthodontic Treatment, J.A.D.A. 24:560 (May) 1937.

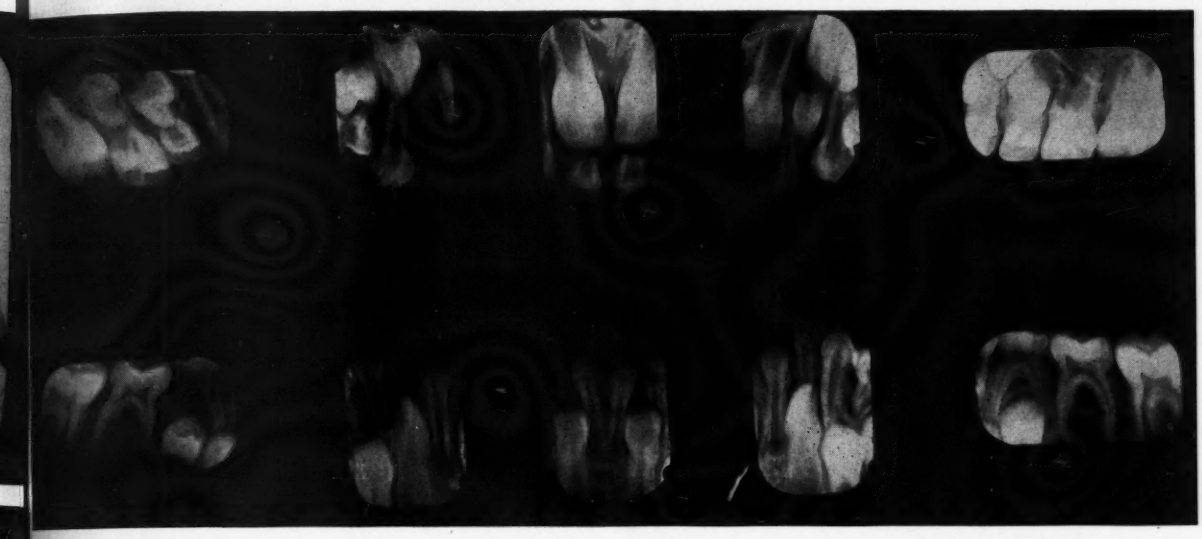


Fig. 8—Complete roentgenographic examination of a girl, aged 6 years revealed congenital absence of lower right and left second bicuspids, of upper right second bicuspid and upper left lateral. Upper right lateral is peg-shaped. Girl will present an orthodontic problem and should be referred to an orthodontist for examination. With cooperation between dentist and orthodontist and with a periodic check-up over a period of eight or ten years, patient should be assured of a natural and normal functioning dentition.

habits, such as lip-biting, and cheek-sucking, and abnormal lip and tongue movements and functions. Many cases of malocclusion may be prevented by early attention to and correction of these habits, of which the parents are not aware, or which they do not realize might cause malocclusion. Bone is plastic and its form is related to the demands made on it. Pressure or traction developed from muscle function is necessary for the development of the normal jaw. One can realize that sleeping habits, such as resting the head on the chin, or placing the fist underneath the chin, or sucking on the thumb or on pillowcases, will exert a positive or negative pressure of the erupting teeth and with the pull and pressure of the masticatory and facial muscles, will interfere with proper growth and development of the jaw and will result in malocclusion. These habits can be detected early. The attention of the parents should be drawn to them and measures should be instituted to break these habits in a wholesome manner.

Premature Loss of Teeth

Another prevalent cause of malocclusion which is preventable is the condition resulting from the premature loss of foundation teeth or the first permanent molars. The shifting, drifting, and tilting of teeth is a phenomenon familiar to all dentists. If the foundation molar is lost, the posterior teeth drift forward rapidly into the space.

When the permanent bicuspid attemps to erupt, there is no room for it and crowded teeth in an underdeveloped jaw will result. When a first permanent molar is lost, the second and third molars will drift forward and underdevelopment of the jaw will result with mal-relation between the cusps of upper and lower molars. This, in turn, will lead to opening of contact points, plunger-cusps, food-packing, gingival irritation, caries, pocket formation, elongation of opposing teeth, bone destruction and unilateral chewing habits, and finally loss of teeth.

Space Maintainers

Malocclusion, diminished masticatory functions, and periodontal disease in later life—all may be prevented by the application of simple and inexpensive space maintainers to maintain arch dimensions in premature extraction cases. Only a few general practitioners have made space maintainers for such cases. The harm that will result from such an early loss is of sufficient importance to be regarded as a potential factor in malocclusion.

Roentgenology—Before any foundation tooth is removed, it should be determined by roentgenograms whether the permanent successor is present, how far it has developed, and how long it might take before it will erupt. If it will take more than six months for the permanent tooth to erupt, a space maintainer should be constructed to keep the space open for the successor and thus prevent movement and shifting of the adjacent teeth which might lead to malocclusion.

Three-Dimensional Growth — The space maintainer should be simple in construction, giving as much natural freedom of movement as possible to the teeth to which it is attached. Nature, in allowing for the development of the face and jaws, has allowed a three-dimensional growth: downward, outward, and forward. The only dimension of particular concern in this problem is that of the outward or lateral growth which is greater in posterior teeth than in anterior teeth.

In the anterior region at about the age of 3 years, the denture grows laterally in anticipation of the function it will have and of the space needed for the normal eruption and occlusion of the incisors. Inasmuch as there is no lengthening of the arches in the bicuspid area, Nature has taken the precaution of making the foundation molar about one-third larger in size than the succeeding permanent bicuspid. This is to allow for the forward movement of the posterior teeth under the process of mastication, so that by the time the tooth erupts after the foundation molar has been lost, the space that allows for

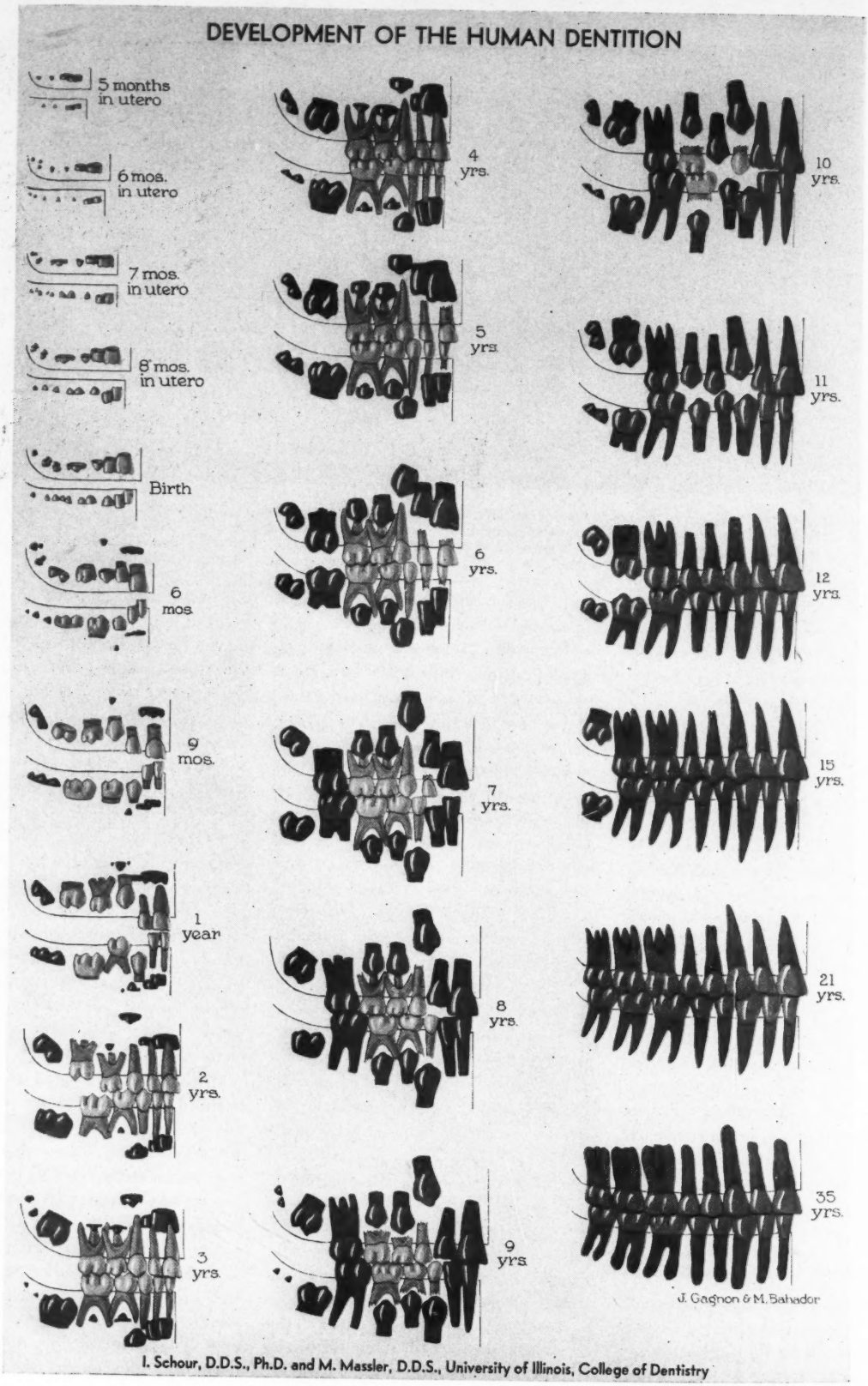
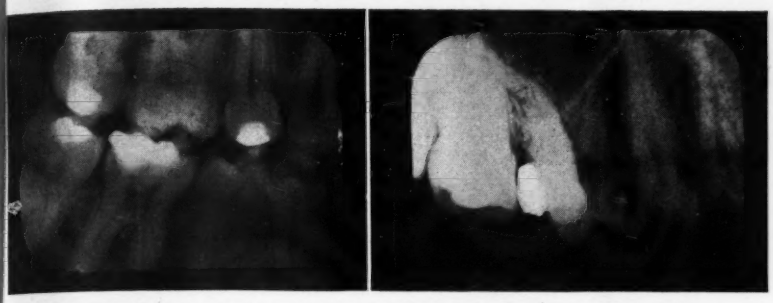


Fig. 9—Development of the human dentition. (I. Schour, D.D.S., Ph.D. and M. Massler, D.D.S., University of Illinois, College of Dentistry.) This chart is available in three colors from the Bureau of Public Relations, American Dental Association. Chart reproduced through courtesy of the American Dental Association.



Figs. 10 and 11—Rotated permanent teeth caused by too long retention of foundation teeth.

the normal first permanent molar relationship will be closed. When the remainder of the space is taken up by the cuspid at the time of the eruption, good contact with the adjacent teeth is ensured.

Indications for Maintainer—When a foundation incisor is lost as a result of a blow or caries, the child should be observed to see that no habits develop, particularly of the tongue, which might result in malocclusion of the anterior teeth. An appliance is not needed for the premature loss of a foundation incisor. When a foundation molar or cuspid, or any permanent tooth is lost, the space must be maintained, or closure will easily result.

Precautions—If a space maintainer is constructed, the following factors have to be considered before placing it in the mouth:

1. The tooth to be banded should be carefully checked and any defects corrected.
2. The tooth should be carefully cleaned, dried, and sterilized, and the space maintainer should then be cemented in place.
3. The patient should be warned against chewing sticky substances and should be seen periodically, every three months, for a follow-up examination.

Removal of Space Maintainer—The space maintainer is removed when the roentgenograms show that the tooth is ready to erupt or part of the cusp has erupted through the gum tissue.

Construction of Space Maintainer

The material for the space maintainer consists of a round 18 gauge clasp wire in yellow or white gold, 18 karat solder and a band material .005 inches thick and 4 mm. wide.

Fig. 12

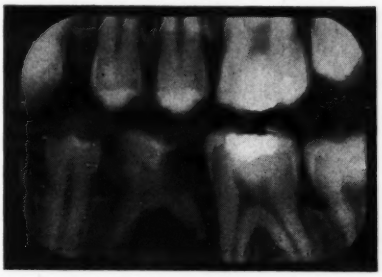


Fig. 13

Figs. 12, 13, 14—Roentgenograms showing congenitally missing permanent teeth. Note variety in root resorption.

1. The band is adapted to the tooth after the metal is heated, and with a special pair of pliers the band is drawn tightly around the tooth.
2. The band is then removed and soldered.
3. After it is festooned, so that it does not cut into the gingivae, the band is adapted to the tooth, burnished, and a plaster impression of the arch segment is taken.
4. A model with the band in position is made and the clasp wire is bent and then soldered to the band.
5. After it is polished, the space maintainer is ready for cementation. The entire procedure can easily be carried out in the office in a short time.

Prolonged Retention of Foundation Teeth

Too long retention of the foundation teeth is also a cause of malocclusion which could be prevented by the dentist in general practice. The general trend of thought has been that Nature has the miraculous power of doing the right thing at the right time, even when it comes to the timely exfoliation of the foundation teeth. Not many years ago prolonged retention of the foundation teeth was not diagnosed by the dentist until the succeeding permanent tooth had erupted buccally, lingually, or labially to the foundation tooth, which was no earlier than the layman recognized the abnormality. With the routine roentgenologic examination in every dental service, it is not difficult for any dentist to determine when the foundation teeth should be removed in order to prevent prolonged retention, which so often results in ectopic eruption or in impaction of the permanent successor.

The main reasons for the prolonged retention of the foundation teeth may be classified as follows: (1) Incomplete resorption of one or more roots or a portion of a root of the same foundation tooth as a result of lack of uniformity in the resorptive process; (2) the late development or complete absence of the permanent successor; (3) lack of coordination between the intermittent process of resorption of the foundation teeth and the forces of development and the continuity of eruption of the permanent successor.

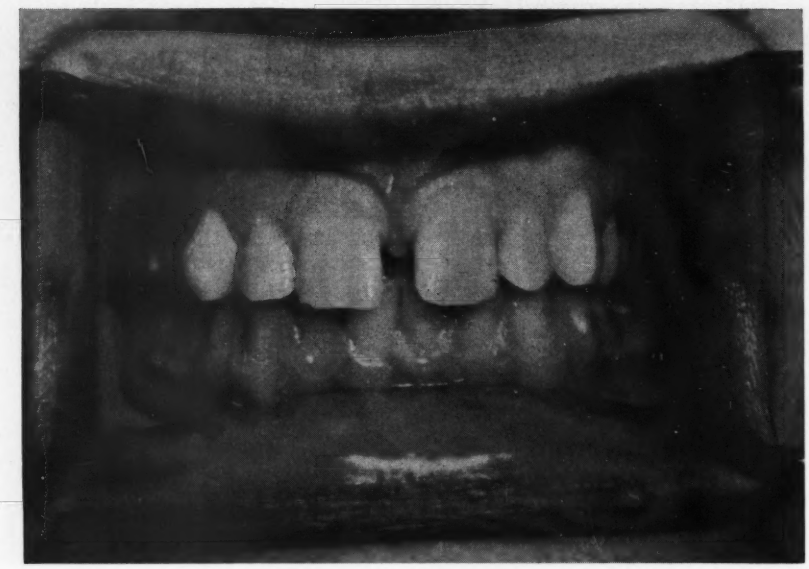


Fig. 15A

If there is synchronization of all these forces, exfoliation of the foundation tooth occurs at the proper time, followed shortly by the eruption of the permanent successor. It is necessary to know the approximate time for the shedding of the foundation teeth and the eruption of the permanent teeth, which vary somewhat with every child.

One should not remove foundation teeth, however, unless a roentgenogram has been taken and the presence and position of the permanent tooth have been determined. It often happens that the growing impulse present in the permanent tooth causes it to grow in a different direction and in malposition. This is found mostly in the upper cuspids. If such a condition is found, it is necessary to discuss with an orthodontist how to treat it before attempting to remove the foundation cuspid. It might be necessary, if the required space for the cuspid is present, to expose the retained permanent cuspid crown surgically in order to fit a band or crown around it, so that it may be pulled down and guided into place with a properly constructed appliance.

The attention of the parents should be called to the fact that the tooth is still lying in the bone and is lying in a position that prevents it from erupting in its proper place. This might cause disturbances of adjacent teeth by pressing or pushing against them, thus bringing about a malposition of anterior teeth. There is also a chance that a follicular cyst might develop later in life with all its accompanying pathologic consequences.

Fig. 15B

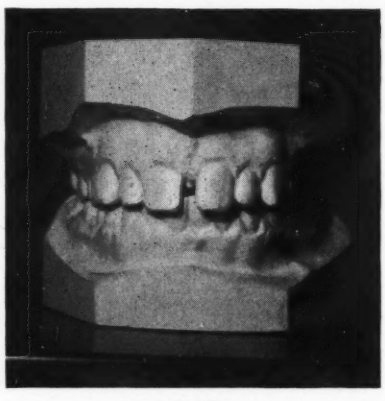


Fig. 15C

The best solution in such a case is orthodontic treatment to save an important tooth in the denture which will prevent any distortion of the facial contour or any malocclusion or shifting of the midline of the upper jaw.

If resorption of both the mesial and the distal roots is incomplete and the foundation tooth is not extracted at the proper time to allow the permanent tooth to erupt, the succeeding permanent tooth, owing to the impulse of eruption, tends to rotate rather than erupt buccally or lingually to the preceding foundation tooth. This may be accounted for by the fact that in its effort to find the point of least resistance, the tooth begins rotating and often turns completely around, inasmuch as the roots of the foundation tooth by the cone-like enclosure have a tendency to hold the permanent tooth upright.

Often, as in the case of congenital absence, Nature prevents the normal exfoliation of the tooth by a congenitally absent successor. What accounts for the lack of resorption of the roots of such a tooth cannot definitely be shown; however, one would be tempted to conclude that the permanent successor does play a rôle in root resorption. If the resorptive process remains inactive, the foundation tooth may serve for a long time, at least up to the time when the development and growth of the face and jaw are completed and all teeth have fully erupted. Only then can replacement by some type of prosthetic appliance be done of the missing permanent tooth, after removal of the foundation tooth.

Supernumerary and Missing Teeth

Supernumerary teeth and missing permanent teeth are not common, but they are frequent enough to warrant a careful examination and search for them. It should be routine practice to make a full roentgenographic examination of the mouth of every child of 6 years of age. Parents should be told of its value with regard to the prevention of possible malocclusion, possible early loss of teeth, possible interference with esthetics and appearance, and the possible saving of large expenses at a later

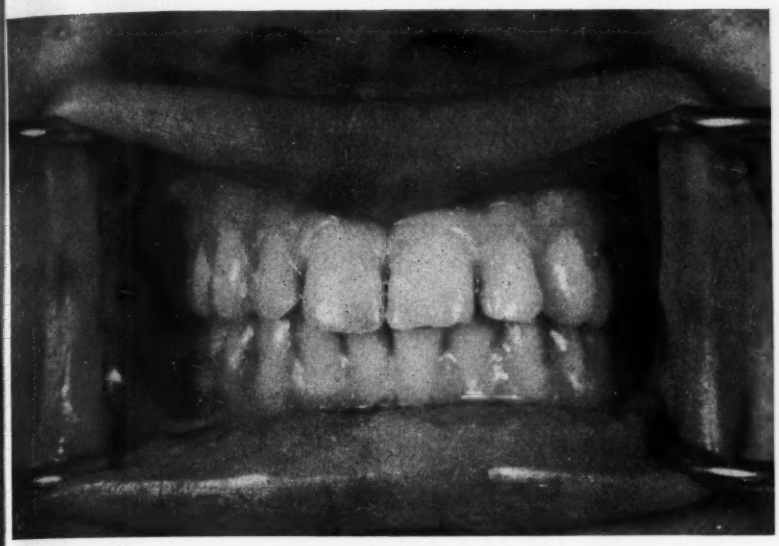


Fig. 16A

time. Any missing or supernumerary teeth which might result in a later malocclusion can be detected roentgenographically, and the necessary steps taken to prevent such a condition.

Abnormal Superior Labial Frenum

An abnormal superior labial frenum is cited as a frequent cause of malocclusion. The frenum may be abnormally developed from hypertrophy with or without definite separation between the first maxillary incisors, known as a diastema. At birth the frenum reaches the palatine papilla which is situated in the midline in the anterior region of the palate. With the eruption of the teeth and the formation of an alveolar process the position of the frenum is usually found in the midline of the gum tissue covering the alveolar process a short distance above the gingival line of the maxillary incisors.

The frenum consists essentially of a vascular connective tissue covered with epithelium similar to that of the oral cavity. No muscle fibers are present.

Treatment for an abnormal superior labial frenum consists of surgically moving it into its proper position in the labial part of the alveolar ridge and orthodontic movement of the incisors, if a diastema is present. The best time for the treatment is when the lateral incisors and the cuspids have erupted or when all permanent teeth as far as the second molar are in place.

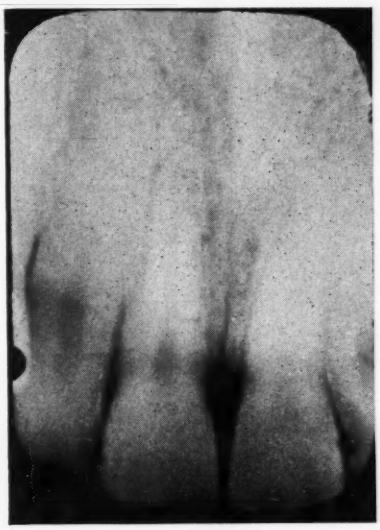


Fig. 16B

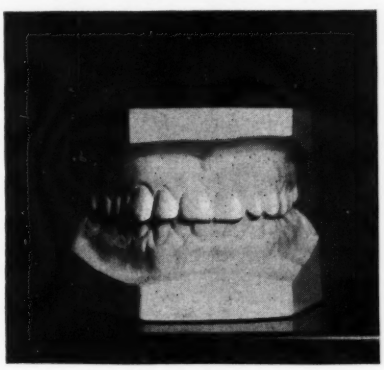


Fig. 16C

Figs. 15 and 16—Enlarged frenum and large diastema in girl, aged 15 years. Fig. 15, Before treatment. Fig. 16, After treatment. Treatment lasted 15 months, including the wearing of a retention appliance.

The dentist frequently is asked to remove the frenum and to move the two incisors together. In many cases such a procedure will be successful if the two teeth are kept together for a considerable length of time by a retention appliance. Special precaution should be taken that the teeth are moved bodily; that means that the long axis of the two teeth to be moved should always be parallel to each other and that the teeth should not be tipped toward each other; however, despite the retention appliance, the incisors might move back to their original position and only surgical intervention in removing part of the intermaxillary bone might bring about a permanent result.

The Third Molar

The third molar should be retained in most instances even if apparently impacted until the maximum growth of the face, denture and jaws has been attained. This should be between 16 and 18 years of age. The unnatural preparation of food and the lack of proper and vigorous mastication has interfered in a large percentage of cases with the normal development of the jaws. Where there is apparently not enough room left in the arch for the third molars, they should be extracted after 16 or 18 years of age, because they are a source of continuous disturbance in that pericoronal infections, chronic infections, pain and discomfort frequently occur. They might cause shifting and overlapping of incisors even in cases that have not received orthodontic treatment, because the occlusion was considered to be normal. Periodic roentgenologic examination at intervals of one year, after about 16 years of age, are advisable to determine whether the growth is normal. A tipped position of the third molar in its early development does not indicate that the tooth may become impacted.

47 *Arden Street.*

THE USO NEEDS YOUR HELP

Repairing a Broken Bridge Facing*

Lieutenant REXFORD H. STEARNS, Dental Corps, U. S. N. R., Great Lakes, Illinois

DIGEST

The use of an elastic impression material has made possible an accurate method of preventing a cement line in repairing a broken bridge facing. The procedure is illustrated.

FREQUENTLY WHEN a facing for a bridge repair is returned from the laboratory and is cemented to place there is a cement line present on the lingual surface of the bridge which makes an accurate fit impossible. The original impression, which is usually taken in compound, is responsible for this condition, because it is easy to distort the compound during removal of the impression. Many ridges are sharp under the saddle areas and there is a great deal of pull or drag on the material which distorts the impression on removal. This difficulty can be overcome by the use of hydrocolloid. The procedure by which this is done is shown, step-by-step, in accompanying illustrations, and is a further adaptation of the technique described by me in this magazine last month.

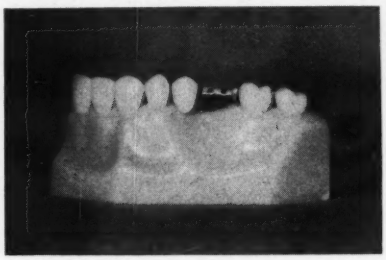


Fig. 1—Bridge with broken facing, to be replaced on the upper first molar.

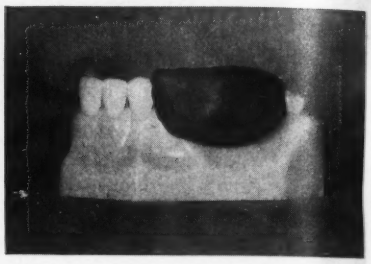


Fig. 2—Construction of a compound splint over the pontic. This is removed.

Fig. 3—Impression is cut out so as to have a cup in which to hold the hydrocolloid material. The surface of the compound is etched with a knife or with chloroform before the hydrocolloid material is placed.

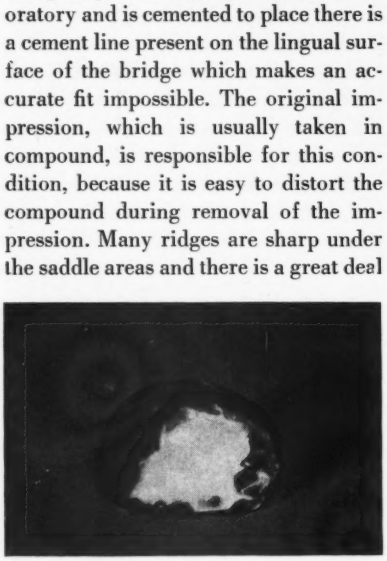


Fig. 4—Hydrocolloid being placed in the compound splint.

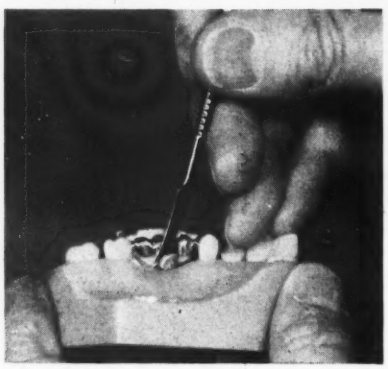


Fig. 6—The splint is placed over the buccal surface of the bridge backing. A certain amount of excess will come through to the lingual which should be trimmed carefully, so that the impression may be removed easily and without distortion.

Fig. 5—Injection of undiluted hydrocolloid at 155° F. into the pin holes, which are already present in the backing.

Great Lakes Naval Training Station.

*This article has been released for publication by the Division of Publications of the Bureau of Medicine and Surgery of the U. S. Navy. The opinions and views set forth in this article are those of the writer and are not to be considered as reflecting the policies of the Navy Department.

Fig. 7—Impression with the pin holes sharply reproduced in the impression; the impression of the saddle area is seen to be distinct.

Fig. 8—Model in stone. Before this model is poured, the hydrocolloid is immersed immediately in the potassium sulphate bath. The purpose of the potassium sulphate bath is to help control the setting of the stone model. According to the Bureau of Standards an acid formation occurs during the setting of the stone which is caused by the chemical action between the hydrocolloid and the stone. This bath prevents the hydrocolloid from giving up its water and at the same time prevents the penetration of this moisture into the stone model.

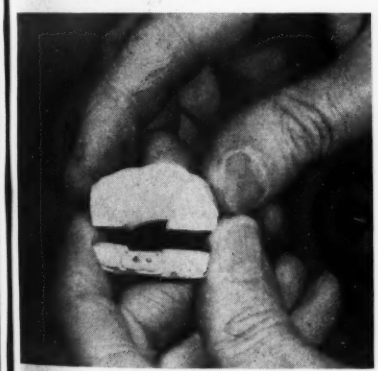


Fig. 10—Place the platinum pins, and proceed to grind in the porcelain facing, and back the porcelain saddle in the usual manner.

Fig. 13—Appearance of the wire in the poured model which has also been immersed in the potassium sulphate bath. After the model was poured, it, too, was placed immediately in the potassium sulphate bath. This bath solution is of 145 grains of potassium sulphate to 1 quart of water. This is the same proportion used by the manufacturer (S. S. White) to keep the colloid in balance. The impression is immersed in this solution, and the poured model, immediately after pouring, is likewise placed in this solution.

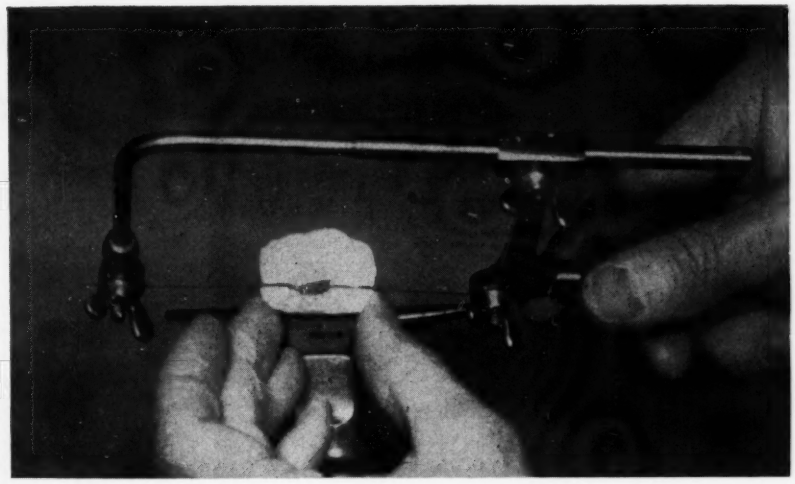


Fig. 9—When the model has been constructed, saw it half way in two, being careful not to saw the bridge portion or the saddle portion, but pass the blades through the area which the facing fills; then break the model the rest of the way. This will give the two halves which are to aid in the construction of the porcelain saddle.

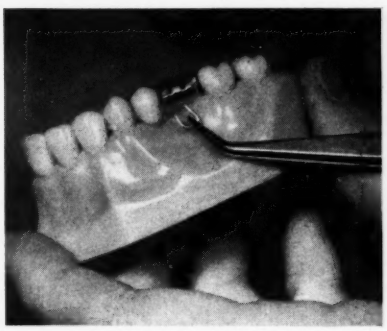


Fig. 11—I prefer to use an acrylic facing, which is satisfactory here, a round gold wire, used in orthodontia, may be fitted to the correct size of the pin holes in the backing. This wire is formed in a U-shape. This should be constructed so that the wire will remove easily without binding.

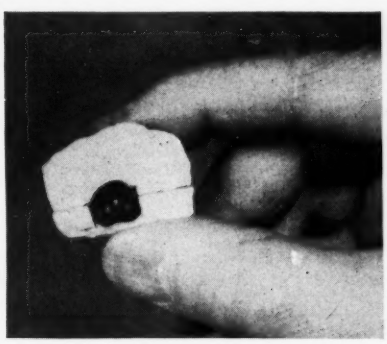


Fig. 14—Construction of a wax pattern.

Fig. 12—An impression is taken with hydrocolloid in the compound splint in the manner already described. The gold wire is seen in the proper place in the hydrocolloid impression.

Fig. 15—Final facing which has been processed in acrylic.

Fig. 16—Finished facing in place.

Is There Normal Bone Between the Cystic Cavity and the Maxillary Sinus?

BERNARD P. MORGENSTERN, D.D.S., B.S., M.D., New York City

THIS BRIEF diagnostic forewarning is presented so that the operator may know at a glance if the maxillary sinus is likely to be opened during surgery of a cyst.

I am concerned here only with those cysts beginning at the bicuspids or molars and extending distally and upward toward the maxillary sinus. This is the type of cyst in which injudicious surgery may open into the sinus. If the cyst extends directly to the floor of the sinus, the roentgenogram will appear as shown in Fig. 1 and diagrammatically in Fig. 2. This is the most dangerous type.

If the cyst is diverted to the buccal or lingual (lateral or medial) there is more likely to be a solid layer of bone between the cyst membrane and the schneiderian membrane. In this case the roentgenogram will appear as in Fig. 4 and diagrammatically as in Fig. 5.

It will be further noted in Figs. 4, 5 and 6 that the sinus has the full sweep of a circle without any invagination; whereas, in Figs. 1, 2 and 3 invagination does occur.

240 *East Seventy-Ninth Street.*

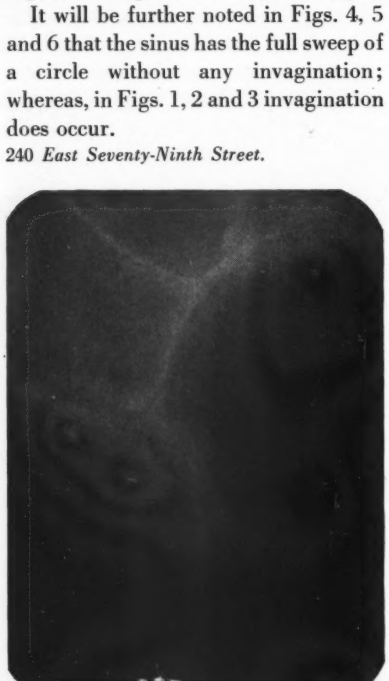


Fig. 1—Type of cyst in which injudicious surgery may open into the maxillary sinus.

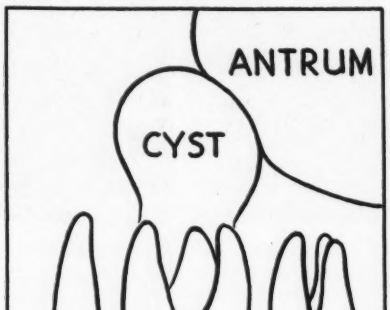


Fig. 2—Cyst encroaching on maxillary sinus, causing invagination of the latter. When a roentgenogram appears as in Fig. 1, the cystic and schneiderian membranes are contiguous. If there is a history of infection, it may be assumed that the maxillary sinus is invaded and possibly infected.

Fig. 3—Geometric concept of Figs. 1 and 2.

Fig. 4—Type of cyst which does not affect the maxillary sinus. The circles formed by the cyst and sinus bisect each other. The cyst is lateral or medial to the sinus and normal bone intervenes. The full sweep of the antral circle is not disturbed.

Fig. 5—Diagrammatic representation of roentgenogram shown in Fig. 4.

Fig. 6—Geometric concept of Figs. 4 and 5.

Fig. 4

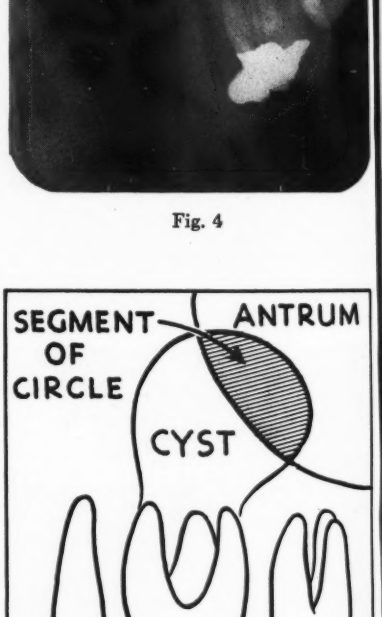


Fig. 5

Fig. 6

The Editor's Page

RECENTLY A group of New York dry goods stores were fined $80,000 for violating the Anti-Trust Laws by attempting a boycott of the advertising pages of the *New York Times*. The Department of Justice contended that no group in the business world can conspire to destroy the interests of another group. Anything that even remotely appears to represent a boycott or an alleged threat to invoke a boycott is looked upon by the government as a serious offense. Although it is a far cry from retail dry goods stores to dental societies there is a parallel that must not be overlooked:

Some time ago a specialized group within dentistry disliked certain advertising that was appearing in many of the dental journals in the country. This specialized group at no time took formal action or made any threat to boycott the publications carrying this advertising, but some of the more enthusiastic members of this professional society must have made such a threatening statement. The result was that the Federal Trade Commission conducted an investigation. It is doubtful that this professional society had any other wish or thought than to eliminate the advertising of a product that might be injurious to the public. It is not likely that in this case there were any selfish interests involved. Apparently, however, regardless of good intent or high motives, if any action is taken against a business interest which appears to be a conspiracy in restraint of free enterprise, a serious offense is committed and prosecution for violation of the Anti-Trust Laws is likely.

There is additional evidence to suggest that the eyes of the federal government are turned attentively toward the organizations in the health field. The recent action of the United States Supreme Court in sustaining the conviction of the American Medical Association for violating the Anti-Trust Laws shows that professional societies are within the bounds of the Sherman Act.

These cumulative events should act as a warning to some of the zealots in the dental profession who at one time conspired to destroy some of the independent dental journals. One group, notably represented by the American College of Dentists, set up its own classification of acceptable and non-acceptable journals and attempted a form of boycott against the "unacceptable" journals by denying members of the American College of Dentists the democratic privilege of publishing their material where they pleased. This action in restraint of freedom of expression and enterprise and unrestricted competition was unfortunately accepted without protest by some of the more fearful dental deans. Some dental college professors were intimidated into refusing to publish their articles in journals that did not have the approval of the self-appointed censors in the American College of Dentists.

We have heard little in recent months concerning this old controversy in dental journalism and most dentists now feel independent enough to publish where they choose. It may be that the quiescence that has come into the dental journalism picture evolves from the knowledge that the eyes of the federal government are now directed our way and that anything suggesting a boycott, a threat of a boycott, a curtailment of free enterprise and fair competition, or a conspiracy tending to destroy the properties and interests of others—any such suggestion is subject to investigation by the Federal Trade Commission and prosecution as being of an unlawful nature.

The former recrimination and destructivism in dental journalism is giving way to a cooperative activity between representatives of the society and the independent journals whereby an advertising code of fair practice has been established which has as its purpose the control of objectionable advertising by the persuasion of education and mutual helpfulness rather than by the forces of unlawful procedure of censorship or boycott. This Advertising Code Committee of the American Association of Dental Editors gives good promise for a productive future.

THE DENTAL DIGEST and its companion publication, ORAL HYGIENE, have never been subjugated by any group in dentistry. These magazines have never forfeited their integrity by masquerading as society publications under the false protection and deceptive creation of an artificial dental society. They have been independent in the complete sense: independent from dental society politics and independent from domination by advertisers. This independence embraces the principles at the core of the democratic process: the right to disseminate information and to reach agreement through open discussion. It is fortifying to know that the tenets of democracy are constantly being defended by the federal government. The channels of communication must be left open. Universal education, a primary tenet of democracy, depends on the principle that facts be made available to everybody through all mediums of expression. The products of learning must be spread and all must be free to contribute to the pool of knowledge.

An Anatomic Technique of Occlusal Reconstruction

JEROME M. SCHWEITZER, D.D.S., New York City

DIGEST

There are many techniques for occlusal reconstruction by which good results may be obtained. The goal should be to establish a harmonious relationship between condylar inclination, incisal guidance, and cusp inclinations, so that when the case is completed, all the involved factors, including the important muscular balance, should be in harmony. To that end, an anatomic technique of reconstruction is offered here.

DURING THE LAST ten years I have presented several cases of occlusal reconstruction by the use of an anatomic technique. The metallic blade to cut the occlusal paths is a useful addition to this anatomic technique and was introduced by Doctor Harry Seides of New York City, from whom my modification was adapted.

Report of Case

A woman presented with extremely abraded teeth, particularly in the incisal region. There was a marked closure of the bite (Fig. 1). The teeth remaining in the mandible were the following: the lower right central incisor, the lateral incisor, the cuspid, the first and second bicuspid, the lower left central and lateral incisors, the first and second bicuspids. Models were made from hydrocolloid impressions. The lower bicuspids had separated considerably, particularly in the lower left region.

Roentgenograms were taken. All the teeth on the lower left side were loose, particularly the lower left second bicuspid.

After consultation with a periodontist, all the teeth were retained for the present, but provisions were made to add to the lower removable replacement if future extractions were indicated. In the maxillae the only teeth that were missing were the upper right first and third molar and the upper left third molar. The upper left first bicuspid was badly rotated and there was a space between it and the adjoining cuspid. There was also a space between the two central incisors as well as one between the right lateral and central incisors and cuspid. The upper right second bicuspid was rotated. The upper right first molar was missing. This was replaced by a pontic which the upper right second molar supported by means of a gold inlay to which it was soldered. The bridge had no anterior support whatever (Figs. 2, 3, 4).

Procedure of Reconstruction

Preparation of Lower Teeth—1. The lower four bicuspids were prepared for gold cast crowns.

2. Another hydrocolloid impression was taken of the maxillary teeth.

3. A face-bow registration was made by means of a wax bite. This was taken as accurately as possible in order to obtain the correct axis of rotation. The importance of the axis of rotation being correct is made clear when it is understood that with a correct axis of rotation for each casting the operator is able to open and close the bite more accurately on the machine which is being used when taking the many check bites in the mouth.

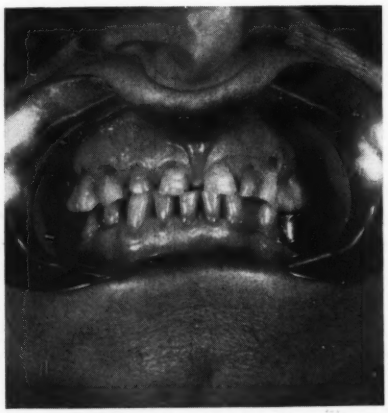


Fig. 1—Front view of mouth when treatment was begun. Teeth are abraded, eroded, separated. Note off-center median line. Closure in vertical dimension is evident.

4. A full lower hydrocolloid impression was taken.

5. The four lower bicuspid amalgam dies, which had been made from the copper band impression taken from the four lower prepared bicuspids, were inserted in their respective positions in the lower hydrocolloid impression, and a lower model was poured in stone.

6. A wax bite registration was taken directly in the mouth in order to obtain the relational centric position.

7. The upper hydrocolloid impression was poured in stone. By means of the face-bow registration, the stone model was mounted on the Hanau model H articulator (Fig. 5).

8. The lower working model was then mounted on the lower frame of the instrument by means of the wax bite taken directly in the mouth (Fig. 6). This wax bite held the teeth apart about 5 mm. The reason for taking it at this dimension was to obtain the unstrained centric relation. When the mounting was completed and the wax bite removed from between the upper and lower models, and the models brought together, it was found that the unstrained centric relation coincided with the physical centric relation. This is not usual. When reconstruction is attempted, in many cases the models in the unstrained centric relation are usually different from those taken in centric occlusion. The reconstruction, therefore, should only be attempted with the models in unstrained centric relation, not with the model in centric occlusion.

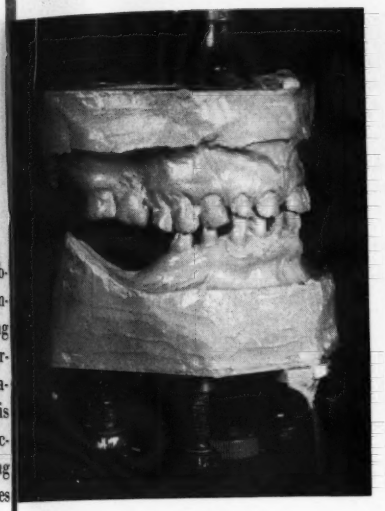


Fig. 2

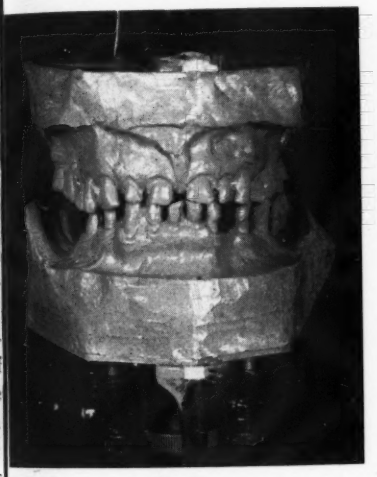


Fig. 3

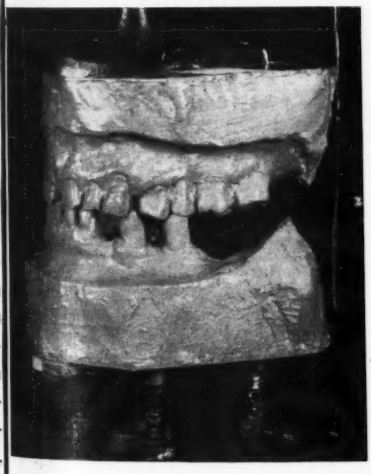


Fig. 4

Figs. 2, 3, 4—Right, left, and front view of first set of study models. They are mounted upon a spherical instrument which was not used in the procedure, however.

9. The next step was to make a bite wax on the lower teeth with which to take the protrusive registration in order to check the condylar inclination. The first protrusive bite wax that was taken indicated a right condylar inclination of +43 degrees and a left condylar inclination of +46 degrees. A second protrusive bite wax was taken and this indicated a right condylar inclination of +46 degrees and a left condylar inclination of +45 degrees. Inasmuch as this record almost coincided, a sagittal registration was taken of 45 degrees right and left (Fig. 7).

10. By dividing by 8 and adding 12, according to formula, the right and left lateral shafts were set at 16. The registrations were unusually steep; in order to check them, therefore, roentgenograms were taken of the condyles. These roentgenograms indicated a deep fossa with a steep articular eminence. This coincided with the steep registrations.

11. After the registrations on the machine were set, it was necessary to build up an incisal guide in order to establish harmony with the upper centrals, laterals, and cuspids. The incisal pin was set at a zero registration. The opening was made sufficiently large by means of the incisal pin so as to permit little or no overbite in the incisal region.

12. The central, lateral, and cuspid were then carved in wax to approximate the future finished porcelain jacket crowns. (Fig. 8). The definite known factors now established on the machine under the operator's control were as follows: (1) condylar guidance, (2) incisal guidance, (3) plane of orientation. It therefore remained only to establish a compensating curve and a cusp guidance for the posterior teeth, which would harmonize with the known factors.

13. To obtain the cusp guidance:

a) Several layers of wax were placed on the occlusal surface of the lower posterior teeth. With the steep condylar guide, a deep compensating curve was necessary to obtain balance, particularly in protrusion; therefore the occlusal wax was trimmed so as to permit a steep compensating curve (Fig. 8).

b) Two strips of metal were then taken about 2½ inches by ½ inch by 1/32 of an inch. These were placed on the occlusal surface of the bicuspid teeth with the blade in the central groove, running mesial-distally and on a line with the lingual surface of the upper molars. These blades were waxed to the lower wax bite, posteriorly to the lower bicuspid. The upper model was now taken off the articulator.

c) The blades were boxed to a new upper frame and attached to the upper frame by means of plaster. When the upper arm of the articulator was moved in protrusion and back to centric relation the blades cut an antero-posterior path in the lower wax. The blades were so adjusted that in protrusive position and back to centric position, they maintained contact with the wax path insofar as possible. The contact depended on the depth of the compensating curve as regulated by the condylar and incisal guidance.

d) After the antero-posterior path was established, the lateral paths were established in the wax by moving the upper arm with the mounted blade to the right and to the left. By this movement, the blade cut paths in the right and left lateral directions (Fig. 9).

14. The four bicuspid cast crowns were prepared to harmonize with these wax paths. They were then tried in the mouth on their respective lower bicuspid teeth (Fig. 10).

15. Another wax bite was taken with these castings in position.

16. A new lower working model was poured from the impression taken with these castings in position.

17. The lower frame was removed from the articulator, and the upper plaster index, with the two blades, was removed from the articulator.

18. The upper working model was placed in its position on the articulator, and by means of the wax bite previously taken in the mouth, the new lower working model was substituted for the old working model on the articulator (Figs. 11 and 12). The new working model was placed on the articulator because the upper teeth were going to be prepared in the mouth and a new bite would be taken with the lower bicuspid castings in position on the lower teeth. This would serve to orient the new upper working model against the new lower working model on the articulator

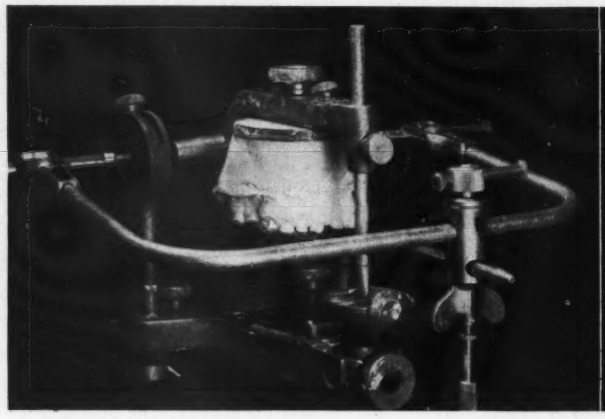


Fig. 5—Another master model is shown here being transferred to an adaptable instrument by means of a face-bow. The more accurate the axis of rotation is, the more able the operator will be to open or close the vertical dimension on the instrument. During the first part of the opening movements the condyles do not move forward in the glenoid fossa.

Fig. 6—The lower working model containing the dies for the posterior bicuspid crowns is shown here being substituted for the lower master cast by means of a centric relation wax bite. Sagittal registrations still remain set at zero.

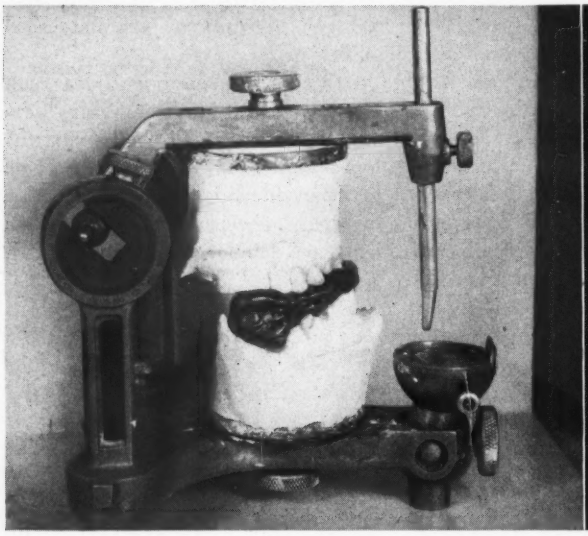


Fig. 7—Sagittal inclinations of condyles are set by means of protrusive wax bites. Two protrusive wax bites were taken and the average was computed. A sagittal registration of 45° was obtained. The lateral shafts were set at 16° according to formula.

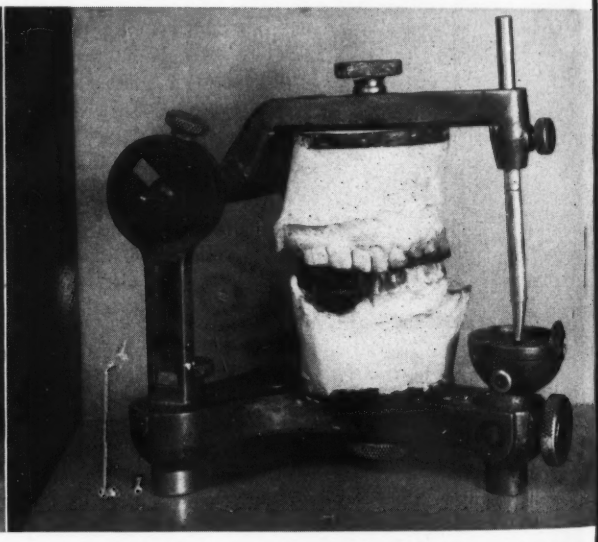


Fig. 8—Incisors built up in wax to establish an incisal guidance. This incisal guidance is kept as close to zero as possible. The compensating curve is worked out in wax and made to conform as nearly as possible with the condyle inclinations and the incisal guidance.

without having to retake all the registrations.

19. The upper posterior teeth as well as the right and left cuspids were prepared. While the upper teeth were being prepared the upper master model was replaced on the upper articulator frame.

20. The lower posterior wax bite, into which was cut the path made by the two upper blades, was placed in position and an attempt was made to close the articulator to see how the upper posterior natural teeth would conform to the ideal path cut by the metal blade in the lower wax. It was then discovered that the natural upper molars prematurely contacted the lower wax paths and thereby held the articulator open anteriorly more than half an inch (Fig. 13). Thus it is seen that in order to comply with the steep sagittal condylar inclination of 45 degrees right and left, it would either be necessary to cut the upper molars back an impossible amount or to compromise. If a compromise were made and only that amount taken off the upper molars which would be compatible with the health of the teeth, when the mandible went into protrusion there would undoubtedly be a space posteriorly between the upper and lower teeth. At this point, therefore, it was decided that a compromise posteriorly would be necessary.

Preparation of Upper Teeth—1. The right second molar was prepared for a full cast crown, cutting back the distal occlusal surface as far as possible in order to permit a deep compensating curve.

2. The right second bicuspid was prepared for a full cast crown, allowance being made for an acrylic buccal surface.

3. The right first bicuspid was prepared for an occlusal inlay.

4. The right cuspid was prepared for

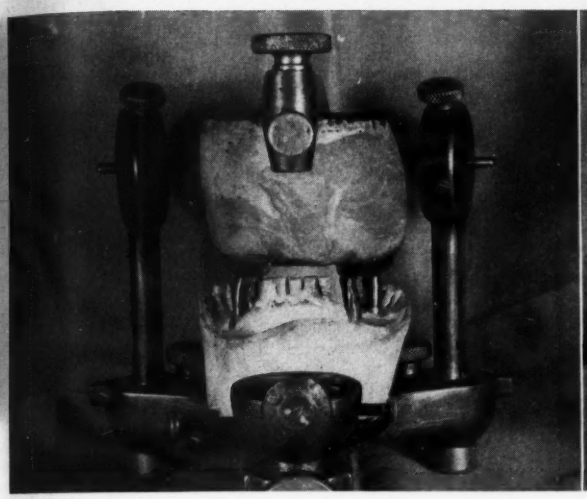


Fig. 9—Metallic blades placed on occlusal surfaces of lower bicuspids with blade resting in central grooves. Blades are engaged in stone and mounted upon the upper articulator arm. The lower crowns are carved to harmonize with movements of the blades.

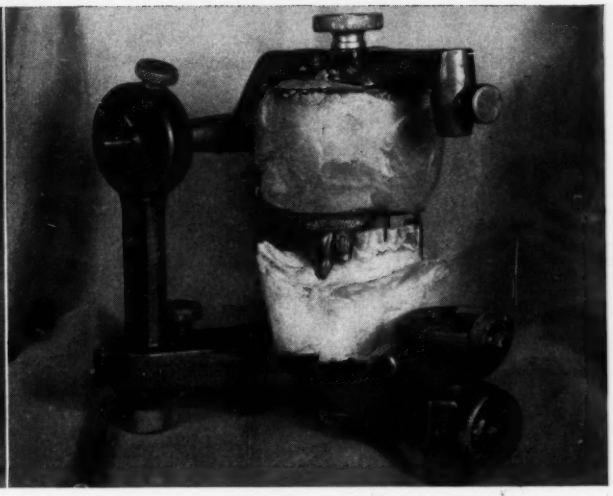


Fig. 10—The compensating curve is also approximated by the anteroposterior movements of the blades.

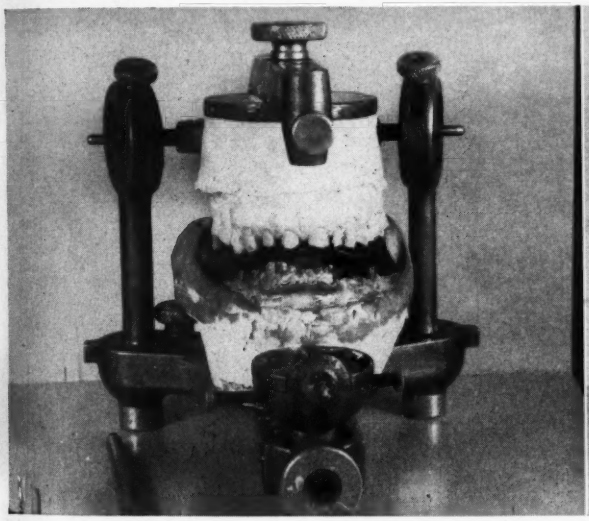


Fig. 11—The upper master model is placed back upon the machine. A new lower working model which was taken with the lower castings in position is now substituted for the old working model by means of a new centric relation wax bite.

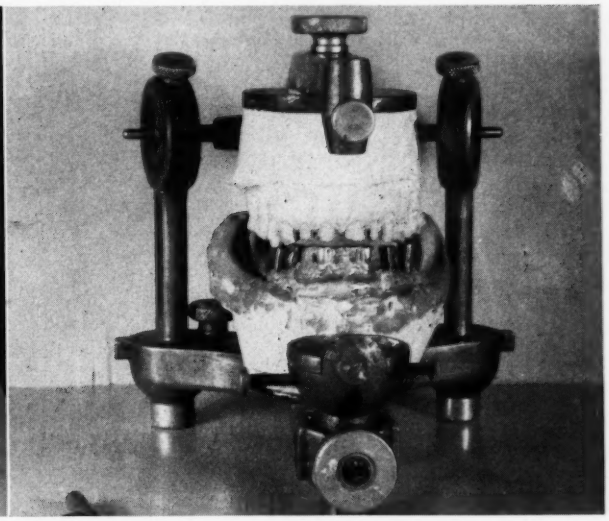


Fig. 12—Centric relation wax bite removed. Upper teeth are now about to be prepared in the mouth. Mounting the new working model makes it unnecessary to make new registrations after upper teeth are prepared.

either a full cast crown with an acrylic facial surface or a porcelain jacket crown (whichever would be most advisable).

5. The left second bicuspid was prepared for a distal occlusal inlay.

6. The left first bicuspid was prepared for a full cast crown, and allowances were made for a buccal acrylic veneer.

7. The left cuspid was prepared for either a full cast crown with an acrylic facial surface or a porcelain jacket crown.

8. The lower left lateral incisor was prepared for a full cast crown with provisions for an acrylic labial surface.

9. A full upper impression of all the preparations was taken in wax.

10. The dies, which had previously been made of all the upper prepared teeth, were now placed in their respective positions in the upper wax impression and an upper stone model was poured (Fig. 14).

11. Another wax bite was taken directly in the mouth with the lower castings in position. This included the lateral cast crown.

12. By means of this wax bite the new upper working model was oriented on the machine to the lower working model. A curious fact was observed. The unstrained centric relation which had previously coincided with the physical centric relation had shifted its position about 1 mm. to the right, so that the median line was now directly in the center (Figs. 15 and 16). The incisal guide pin on the articulator was adjusted to that vertical distance previously determined, which permitted a normal length to the incisal teeth, and as much freedom to the posterior cuspal relation in lateral and protrusive

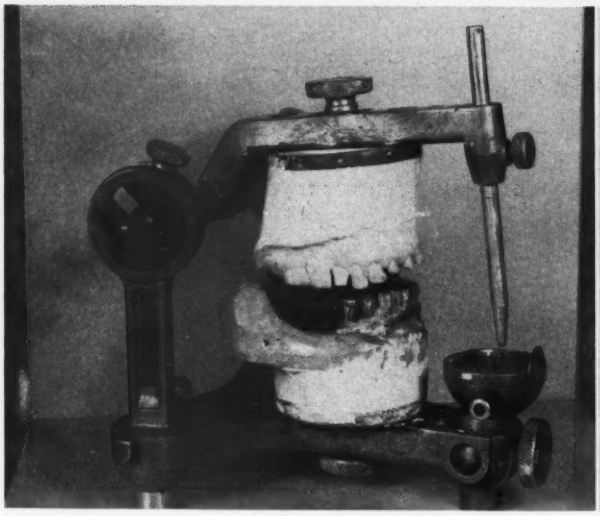


Fig. 13—Wax bite carved by means of metallic blades is placed in position on lower working cast and machine closed to determine how upper model will fit into scheme of occlusal relation. Anteriors are open more than half an inch; therefore the lower occlusal plane will have to be reduced, because it would be impossible to cut the upper posterior teeth sufficiently to accommodate the steep inclination of the wax. Posterior contact in protrusion is not necessary in these cases nor desirable if, in order to obtain it, the upper posterior natural teeth must be impaired.

Fig. 14—The dies of all the prepared upper teeth, which have previously been made, are now placed in their respective positions in the full upper wax impression. A model is poured from this impression.

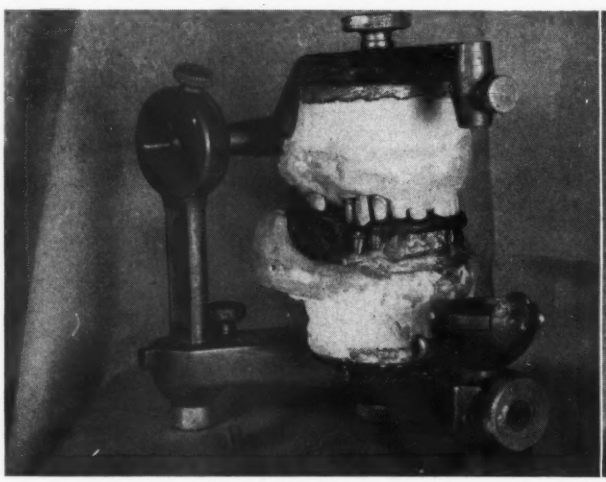


Fig. 15—The new upper working model is substituted for the upper master model. It is articulated to the lower working model by means of a new centric relation wax bite.

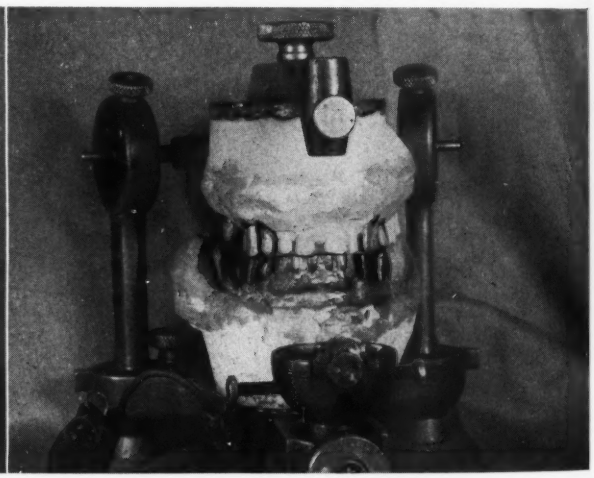


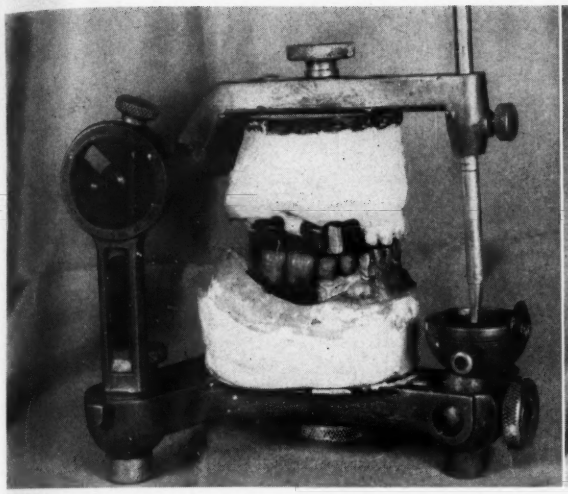
Fig. 16—Centric relation wax bite has been removed. Upper castings will be built to this vertical relationship. Note that the median line is now in normal position. Compare with Fig. 1.

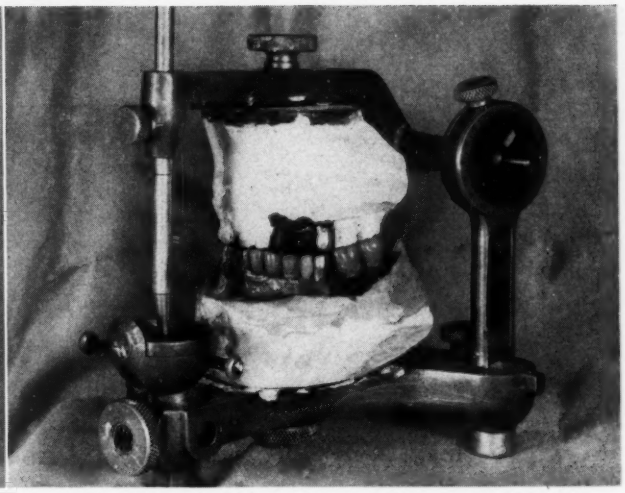
movements as was possible. The object, then, was to make a lower lingual bar that would articulate with the upper posterior castings in such a manner as to allow as many contact points as possible with the given articulator registrations.

13. The upper castings, already described, and the lower lingual bar, just described, were waxed. The lower posterior teeth, which were to be a part of the lower lingual bar, were set into position in their respective saddle areas. The wax on the upper teeth, from the right cuspid to the right posterior molar, and from the left upper cuspid to the left second bicuspid inclusive, were shaped to harmonize with the articulator registrations.

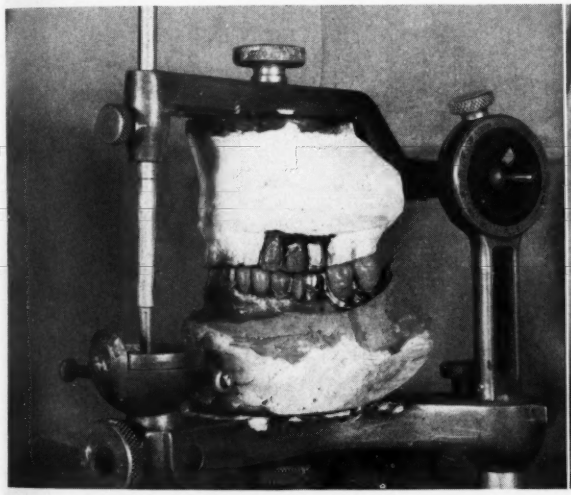
14. The lower posterior teeth of the lingual bar had to be ground accordingly. It is necessary to grind the upper left second and third molars (stone teeth) on the model to harmonize with the steep condylar registrations. These teeth would later have to be ground in the mouth, using the anterior teeth and the lower left side of the lingual bar as the index. When all the castings were waxed, and the waxing of the lower lingual bar was completed, a harmonious occlusion resulted, in conformity with individualized registrations (Figs. 17 and 18).

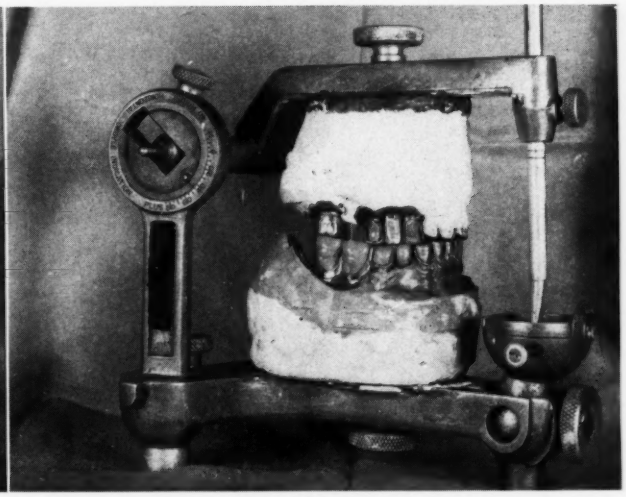
15. *Castings and Lower Lingual Bar Completed in Metal*—The upper metal castings were then completed. The left anteroposterior fixed bridge was completed. The lingual bar was completed (Figs. 19 and 20). The completed castings were removed from the upper working model and placed on their re-





Figs. 17 and 18—Entire occlusion is worked out in wax and porcelain to harmonize with registrations as previously determined and set on the machine.





Figs. 19 and 20—Upper castings completed. Lower anterior left bridge completed. Right bicuspid crowns soldered together and lower lingual bar completed (Fig. 26). Upper two posterior molars in mouth will be ground to harmonize as much as possible with established occlusal plane. Right and left views shown.

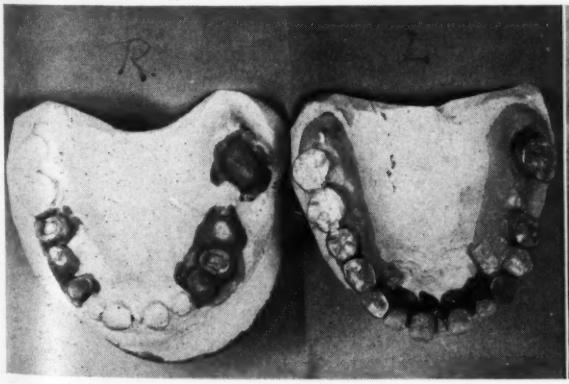


Fig. 21—Right, working model which was used to build first set of upper casting; left, second upper working model made from an impression which was taken after the castings had been fitted in the mouth. Porcelain copings for anterior jacket crowns shown waxed in position.

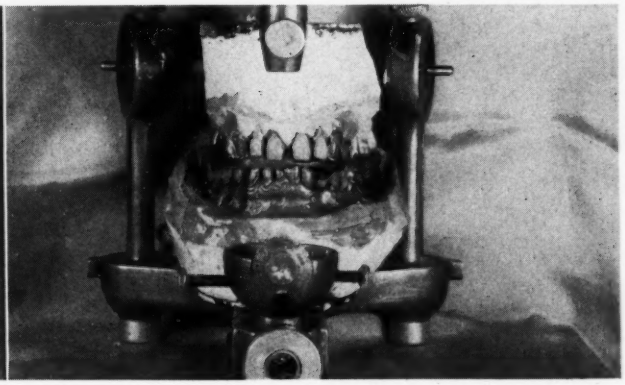
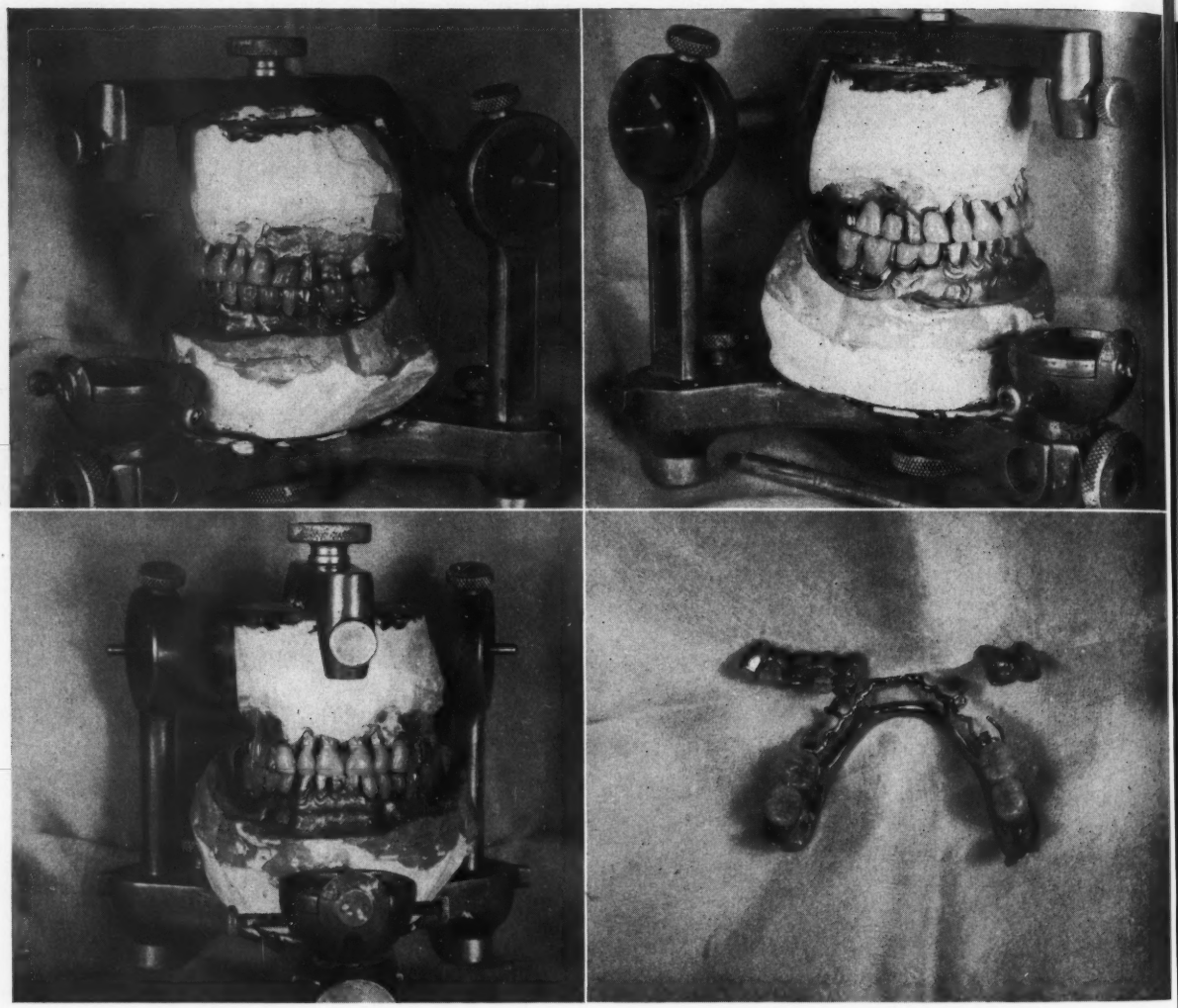


Fig. 22—New upper working model is now substituted upon the machine for the old working model by means of a new centric relation wax bite. Upper right fixed bridge will be completed together with upper anterior porcelain jacket crowns. Acrylic facings will be made to conform with color of porcelain jackets.



Figs. 23, 24, 25, and 26—Right: Left and front views of completed case. Three cast gold crowns soldered together. Combinations of porcelain and acrylic used for esthetics. Two left bicuspid crowns with acrylic buccal surfaces have been soldered together for better support. Lingual bar has a continuous clasp which fits into a recess cut in the lingual surfaces of the fixed attachment. Definite lug seats cut in the fixed attachments support definitely shaped lugs on the removable appliance. Retromolar pads have been engaged by extending the saddle sufficiently far posteriorly.

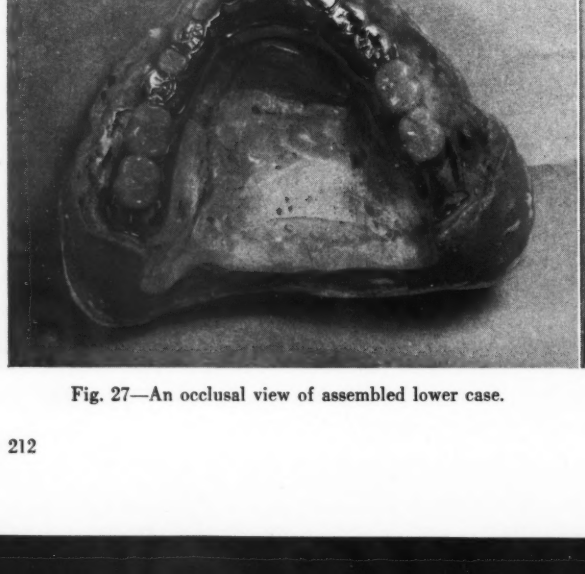


Fig. 27—An occlusal view of assembled lower case.

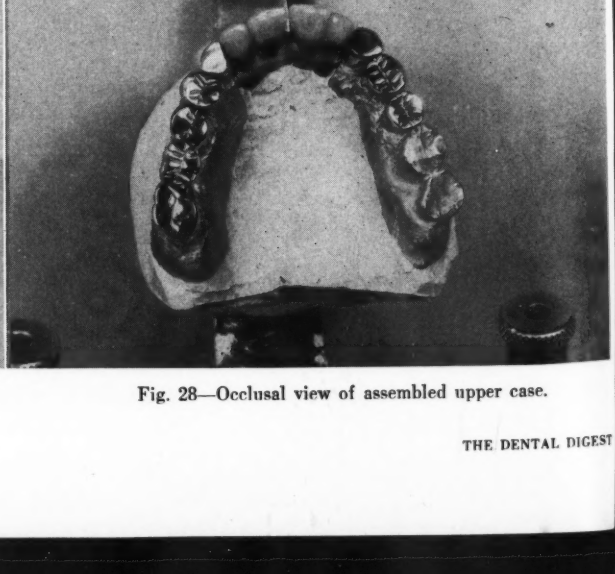
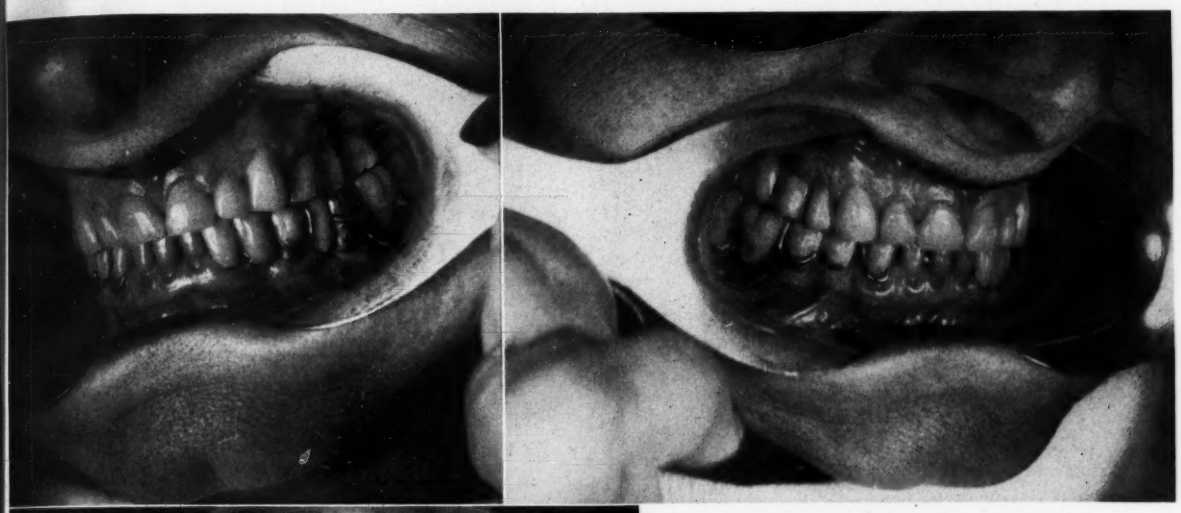


Fig. 28—Occlusal view of assembled upper case.



Figs. 29, 30, and 31—Right: Left and front views of completed case assembled in mouth.

spective teeth in the mouth. The lower castings were removed from the model and placed on their respective teeth together with the lower lingual bar. The bite was checked. The upper left second molars in the mouth were ground back as much as was considered advisable. The lower teeth of the lingual bar were used as the index. The four upper anterior teeth had been prepared for porcelain jacket crowns while the castings were being made. Porcelain copings had been prepared on these anterior amalgam dies. These copings were now placed on their respective teeth. A wax bite was taken directly in the mouth, again to obtain the unstrained centric relation. A full upper plaster impression was taken (Fig. 21). The lower lingual bar was removed together with the lower castings. The upper castings were removed from the mouth and placed in their respective positions in the upper plaster impression. The lower castings were placed on their respective teeth on the articulator. By means of the wax bite, the new upper working model was mounted to the upper frame of the articulator (Fig. 22). The bite was again checked.

16. *Anterior Jacket Crowns*—After the four anterior jacket crowns were completed, the upper right posterior fixed bridge was completed and the acrylic facings were baked wherever indicated, with the color of the jacket crowns used as a guide for the shade.

17. *Grinding of Completed Case*—The completed case was further ground into the movement of the articulator, and was ready to be assembled in the mouth (Figs. 23, 24, 25, 26, 27, 28).

18. *Treatment of Natural Dentition and Assembling of Case*—a) The temporary fillings and crowns were removed from their respective teeth.

b) The lower case was the first case to be assembled, and therefore these teeth were treated first. The lower abutment teeth, namely, the left lateral incisors, and the left first and second bicuspids, were sprayed with warm water, then cleaned with alcohol and treated with cavity varnish.

c) The lower left fixed bridge was cemented in position. This bridge had the three abutment teeth soldered together for strength (Fig. 26).

d) The two lower right bicuspids were cleaned in the same manner and the two bicuspid crowns, which had also been previously soldered together in the same manner as the left bridge, were cemented in position.

e) The lower removable bridge was introduced.

f) The upper right posterior abutment teeth were cleaned.

g) The upper right posterior fixed bridge was cemented in position.

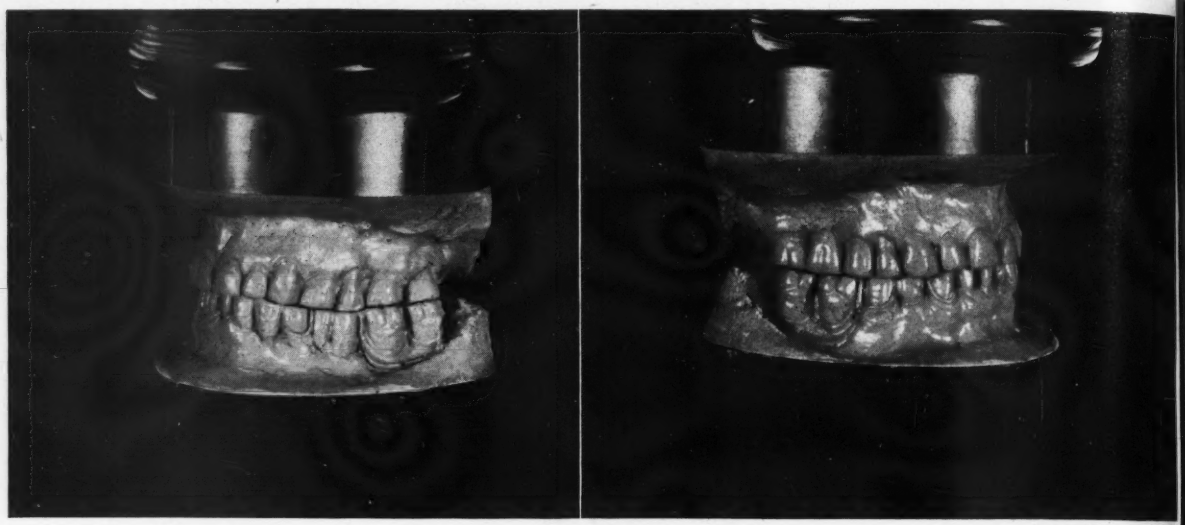
h) This bridge was soldered at both ends.

i) The upper right first bicuspid occlusal inlay and the upper right second bicuspid cast crown was cemented in position.

j) The upper right cuspid cast crown was placed in position but not cemented.

k) The upper left posterior teeth were cleaned.

l) The upper left second bicuspid



Figs. 32 and 33—Models of completed case.

distal occlusal inlay was cemented in position. This inlay had an acrylic tip buccally to hide a portion of the gold.

m) The upper left first bicuspid cast crown was cemented in position.

n) The upper left cuspid gold crown was placed in position but not cemented.

o) The four anterior incisor teeth were cleaned and varnished.

p) The porcelain jacket crowns were cemented on these teeth.

q) The entire bite was adjusted.

r) It was decided at this session to substitute the two upper cuspid gold crowns, the labial surfaces of which had been processed with acrylic, with two porcelain jacket crowns, because an exact color to match the upper anterior porcelain jacket crowns could not be obtained. This was a compromise, because the lingual surface of the upper cuspid crowns had to be extended to form a flat platform which articulated in the lateral excursions of the mandible with the lower anterior teeth and therefore improved the bite (Fig. 28). Full porcelain jacket crowns may fracture with the same bulk of porcelain built out on a platform on the lingual surface; but if the lingual surface of the porcelain jacket crowns were not built out, then the occlusion would not be nearly so good. In order to make sure that the porcelain jacket crowns were built to the same dimension that the full gold cast crowns had been built, two impressions were taken. The first one was taken with the full gold cast crowns in position, the second was taken in the regular manner. The first impression was taken so that the jacket crowns could be built to simulate the cast crowns. Separate dies were taken of the cuspid teeth, upon which to build the two porcelain jacket crowns. This had to be done, because the old dies had been distorted in finishing the gold crowns. The two cuspid porcelain jacket crowns were completed and cemented on their respective teeth.

19. The entire bite was again adjusted.

20. At the next session full-mouth roentgenograms and photographs were taken, as well as roentgenograms of the condyles in closed position. Hydrocolloid impressions were also taken and poured in stone (Figs. 29, 30, 31, 32).

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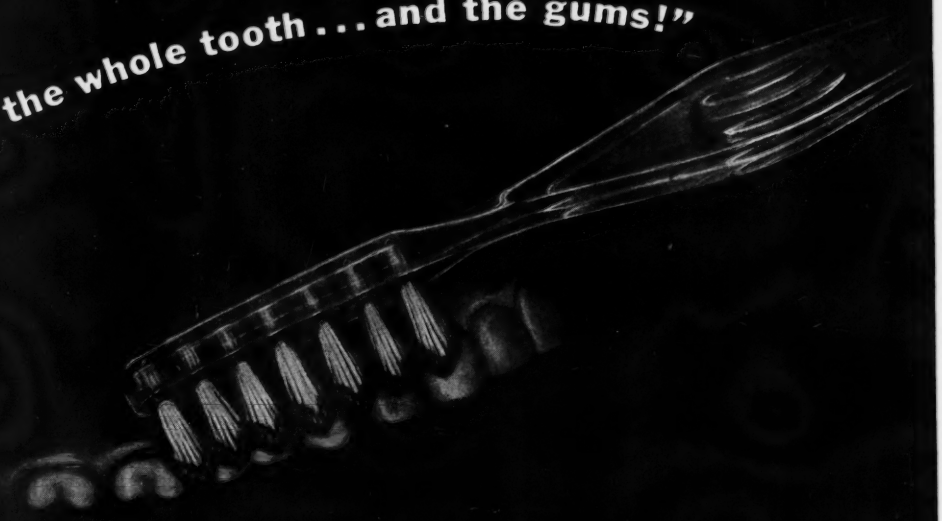

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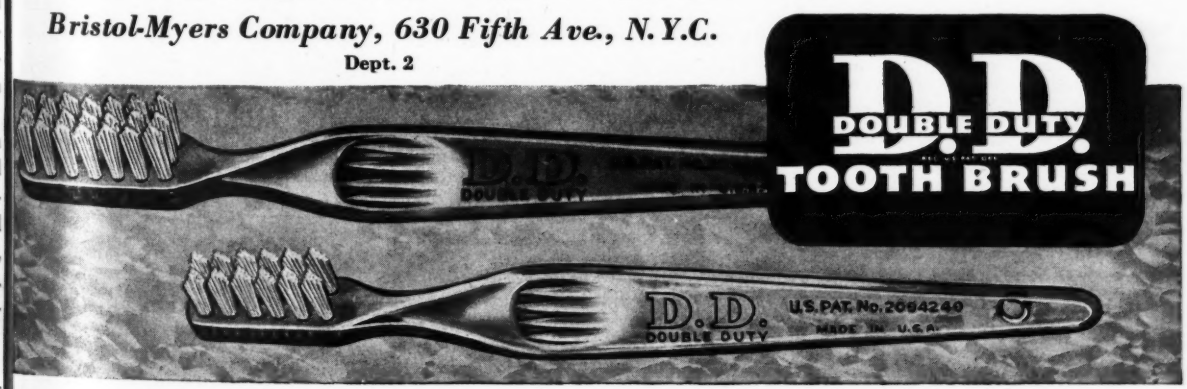

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Predications . . .

We have been pointing out for some time in this column that the procurement objectives for the Army and Navy could not be met by drawing from the dentists under 38. In January of this year the following statement appeared in this column:

"The War Manpower Commission can tell the Selective Service subdivision to put all dentists under 45 in class 1A. After they are in class 1A, if they are to be given commissions, claims for dependency no longer are allowable. That would be one sure way to meet the procurement objectives for the Army and Navy. It may not be necessary, but it is a warning to dentists between 38 and 45 who are now sitting back on their heels because they think they are too old to be drafted. Some of them may experience a surprise. . . ."

On April 15th the War Service Committee of the American Dental Association sent out an order issued by the Directing Board of the Procurement and Assignment Service. Here it is:

"It has been obvious for some time that it will be difficult to fill State quotas for dentists within the upper age limit of the 39th birthday. The Officer Procurement Service is announcing to their district officers that this limit has been increased to 42. However, their willingness to do this was dependent upon assurance from Procurement and Assignment Service that each State Chairman would submit the names in chronological order, that is, all available dentists, age 38 and under, until the supply is exhausted, then all available dentists, age 39, until the supply is exhausted, and then those of age 40 and 41 in turn. Their hope is, of course, to fill the ranks with those under 40 if possible.

"Your cooperation in this plan will be greatly appreciated since it is essential to the revisions in the upper age

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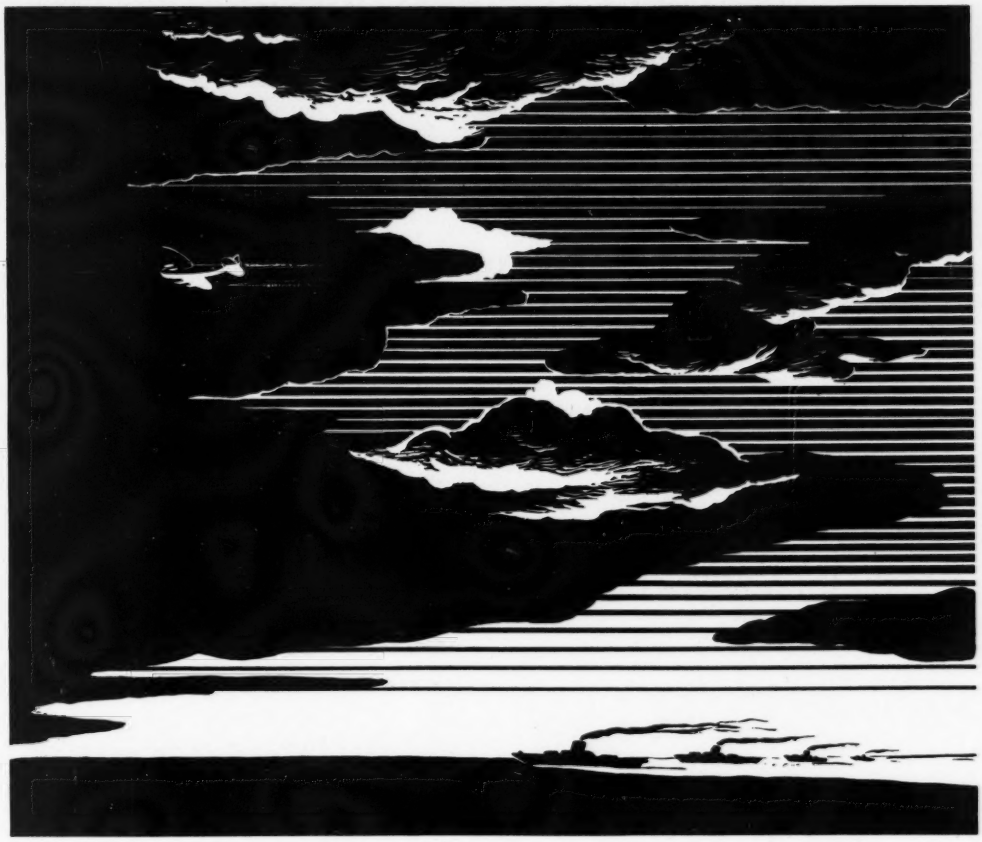

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limit set by the Office of the Surgeon General.

"The Officer Procurement Service is also notifying their district offices that commissions will be extended to dentists between the age of 42 and 44 inclusive who are classified 1A by their local draft boards, provided the reclassification was not at the request of the dentist but was a routine classification by the local board."

A long while ago Mr. McNutt said that unless the procurement objectives were met by voluntary enlistments, there would be "involuntary recruitment." This is another prediction likely to come true.

Likewise in the January, 1943 issue, we commented on the disparity between the number of officers of high rank in the Dental Corps as compared with the Medical Corps. I pointed out particularly that at that writing there were 25 Brigadier Generals in the Medical Corps and only 1 in the Dental Corps. We are now happy to announce that the Honorable John J. Sparkman, member of Congress from Alabama has introduced HR 2442 to provide for the temporary promotion in the Dental Corps of the Army of the United States, in the following manner: 1 Major General and officers in the grade of Brigadier General at the rate of 1 for each 6 officers of the Medical Corps promoted to that grade. There are at present about 30 Brigadier Generals in the Medical Corps. If the Sparkman Bill passes and becomes law, that will entitle the Dental Corps to 5 Brigadier Generals.

The New Rich . . .

There are seldom any vacancies in the ring-side section at a well planned boxing or wrestling match. Recently I attended a wrestling match at which the seat directly in front of mine was unoccupied except for a flashy coat and hat. Although I asked no questions, the puny little fellow to the left of the coat and hat remarked gratuitously for all around to hear: "I always buy an extra seat for my coat and hat."

Trials of an Editor . . .

From time to time we have commented about the inventors and discoverers whom we meet across the editorial desk. Every editor is fearful that some-

NOW that you are relying on anesthesia daily to save more patients pain, thus conserving time and energy for additional appointments, Cook-Waite solutions are increasingly essential in your practice. For all normal procedures, NOVOCAIN with COBEFRIN gives quick, smoothly-induced anesthesia with the tolerance you demand. When longer operating time is needed, NOVOCAIN-PONTOCAINE with COBEFRIN provides it with equal freedom from side reactions. Write for literature on *both* today.

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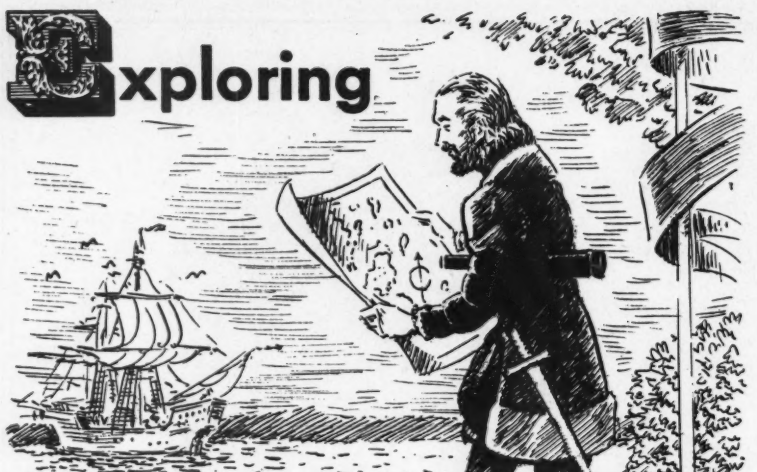

EXPLORING, in days of old, was hazardous at best. Man staked life and limb in his quest of the unknown, accepted many risks in the search for knowledge. It was necessary in the early days of dentistry to subject patients to guesswork and chance—but NOT TODAY. The X-ray *makes it possible* for you to obtain a clear, distinct picture of oral conditions. And Minimax X-ray Film *assures* sharp, clear detail in your exposures. The accuracy and brilliance of Minimax film is a definite aid in detection of incipient or recurrent decay, imperfect root canal fillings, apical abscesses, cysts, fractures, supernumerary teeth, areas of residual infection and many other conditions.

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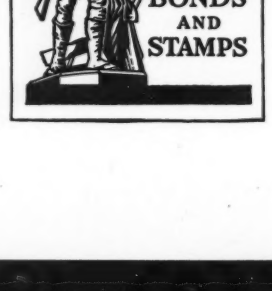


one may submit the spectacular discovery and that the editor in his dumbness may not recognize it. In the search for pure kernels we have to sift through a great amount of chaff. Not long ago a dentist wrote an article describing a technique and an instrument used in full denture construction. The exposition was not clear and the drawings of the instrument were illegible. There was a slight touch of the Rube Goldberg skill in the presentation. The manuscript and the drawings were returned to the author with a request for clarification. The reply was incredible. The inventor-scientist-discoverer confessed that he did not have one of the gadgets that he described after all and that he really did not use this technique himself; but he thought that the idea of the instrument was good even if no one had ever seen one, including himself. We encourage imagination, enterprise, and ingenuity, but when dental techniques are spun out of the thin air, imagination is being stretched to the breaking point.

Prisoners of War . . .

When we think of prisoners of war we envision the poor food, the uncomfortable housing, and unhygienic conditions generally. We haven't given much thought to the additional stress from dental disturbances. Thousands of our own men are now prisoners of the enemies. In the months ahead, sadly we may predict that there will be other thousands. It is unlikely that they will receive any dental care at all even if our own dental officers are numbered among them. Materials and equipment will not be on hand for the care. We can be sure that anything in the way of military dental supplies will be confiscated by our enemies.

In a recent letter appearing in the *British Dental Journal* the situation of a British Army officer in Germany is described. In writing to his father who is a physician, this officer said, "Can you please send by air mail to me a small supply of mercury, etc., for amalgam tooth stoppings. We have been without for some time, the camp supply always seems to be insufficient, if and when it does come. I cannot overstress the importance of this if I am to get back with any teeth at all. Even if a supply does come there is such an enor-

mous waiting list that it has probably run out by your turn; so on no account be put off." Through the agency of the American Red Cross I think dentists may have an opportunity to help our soldiers and sailors who are held prisoners of war.

One of the national dental organizations could do a worthwhile job by immediately making available to the American Red Cross a sum of money to supply cements, forceps, local anesthetic solutions for our men in enemy prison camps. To be sure there is no way of knowing that the enemy would deliver these precious articles where they are needed, but that is a chance we would have to take. It has been pointed out by the British that mercury and silver, being metals that can be diverted to war use by the enemy, should not be sent into enemy country, but some of the more durable cements could be sent instead.

Tropical Diseases . . .

There is nothing new in the observation that in this global war many of our fighting men will contract tropical diseases. We are all aware that the white man has no immunity to tropical diseases. We usually think of malaria, typhus, hookworm, kala-azar, trypanosomiasis, for example, as severe physical diseases. Our thinking has not been geared in terms of the neuropsychiatric phases of many of the tropical diseases. In an excellent article in *War Medicine* of April, 1943, Lieutenant Commander James L. McCartney summarizes the neuropsychiatric manifestations in these significant conditions:

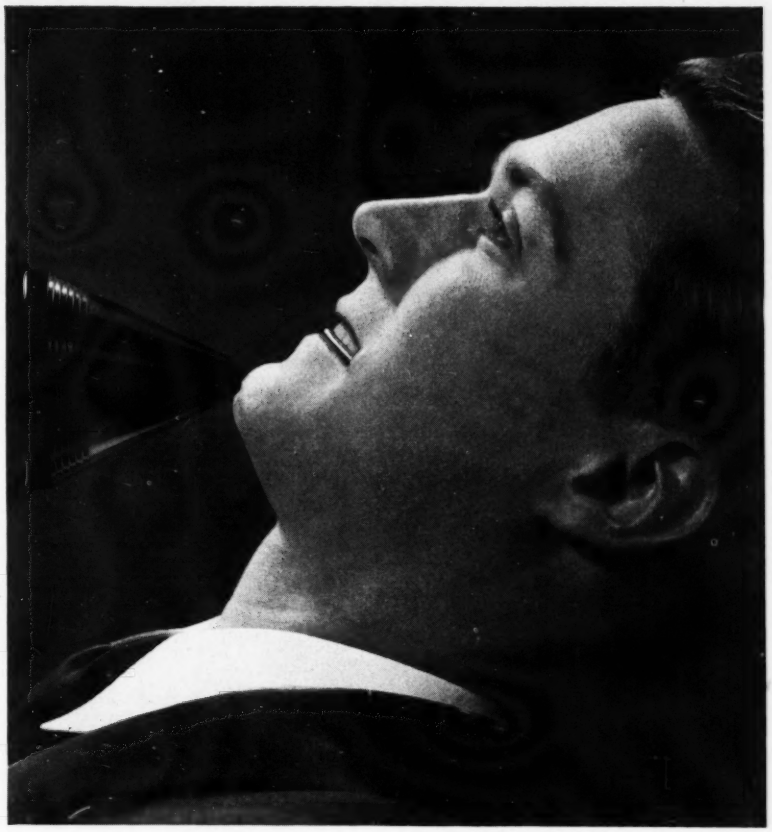
'Climatic conditions, high temperature and humidity may depress the basal metabolism rate of white men and cause mental lethargy. In time hypotension and personality changes may develop.

"Heat fever causes permanent sequelae in the nervous system. The intense sun's rays may cause night blindness and other physiologic changes.

"Sociologic factors in the tropics are of importance in causing the psychoneuroses which are extremely common among white people in the tropics.

"Alcoholism is more common among white men in the tropics than in America. Delirium tremens is a more frequent sequela.

"Vitamin deficiencies and food poi-



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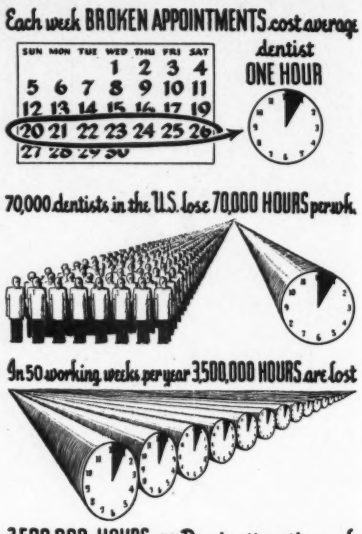
Each week BROKEN APPOINTMENTS cost average dentist ONE HOUR
SUN MON TUE WED THU FRI SAT
1 2 3 4
5 6 7 8 9 10 11
12 13 14 15 16 17 19
20 21 22 23 24 25 26
27 28 29 30
70,000 dentists in the U.S. lose 70,000 HOURS per wk.
In 50 working weeks per year 3,500,000 HOURS are lost
3,500,000 HOURS = Production time of
2333 ADDITIONAL DENTISTS

"The Staggering Loss from Broken Appointments," Doctor L. H. Bertels' article in May ORAL HYGIENE, shows that the profession loses *at least* 3½ million production hours yearly.

"Should Dental Services be Rationed?," by Doctor A. B. Bradley, explains "why we are creating dissatisfaction with dentistry."

"America's First Woman Dentist" built a successful practice before 1900, despite strong professional opposition. Her career is recorded for ORAL HYGIENE by Doctor Edward Bumgardner.

"Dentists With Teeth—Patients Without," written by Frank W. Brock—regular contributor to *The Reader's Digest* and *Liberty*—exposes advertising dentists' come-on tactics.

"Are Dental Hygienists a Menace?," by Doctor Charles L. Hatcher, reveals what one dentist thinks about dental hygienists.

"Praise for Our Navy Dental Officers," written by a captain in the U. S. Navy Medical Corps, Doctor Lucius W. Johnson, presents his observations over a thirty-year period.

"The Federalization of Dental Schools," this month's editorial, deals courageously with a problem of high importance. It is linked with—

"Why Must the Government Take Over the Dental Schools?," ten questions which have been raised by one of the outstanding U. S. dental educators.

"How to Kill a Dental Practice" is another in the series of almost-wordless lessons in practice-management.

Eight popular departments round out one of the liveliest, one of the most provocative issues in the long history of ORAL HYGIENE, which has been publishing lively issues since 1911.

In Your MAY *Oral Hygiene*

soning are encountered more often in the tropics than in temperate climates.

"The dysenteries and diseases caused by parasites may lead to neuropsychiatric sequelae, as may also infections of the blood stream.

"Malaria has numerous neurologic sequelae.

"Syphilis of the central nervous system (tabes dorsalis and dementia paralytica) is rare in the tropics.

"American physicians, both in and out of the armed forces, should familiarize themselves with tropical diseases, and especially the neuropsychiatric sequelae, for many men will return to America from the tropics with permanent neuropsychiatric disabilities. By insisting on certain precautions in personal hygiene and by preparing soldiers and sailors for meeting the normal hazards common in the tropics, many of these sequelae can be prevented."

Dental officers who will be on duty with our troops ought certainly be familiar with the pathologic manifestations of these tropical diseases and should appreciate the possible psychiatric involvement. It is conceivable that the dental officer might be the first to recognize personality changes in the men suffering from tropical diseases.

Those of us at home in the years ahead will be seeing hundreds of these men who have acquired tropical diseases. No one has pointed out, so far as I know, what the dental manifestations or sequelae may be, but the likelihood is great that the combination of disease, neglect, and lack of care may produce gross and serious oral lesions. Just as we have had to expand our national thinking in terms of a global war, we must expand our individual thinking as dentists to picture disease in larger terms.—*E.J.R.*

Are you doing your part by buying WAR BONDS AND STAMPS?

The Local Use of Sulfanilamide

LOUIS J. PEREIRA, JR., D.D.S.
Three Rivers, Massachusetts

DIGEST

A series of cases is reported in which there was either periapical involvement of the teeth extracted or inflammation of the tissues. Sulfanilamide (7½ grain tablets) was used to combat infection. The tablets were easily broken into halves or quarters, depending on the amount of drug desired.

The portion of tablet used was granulated by crushing with a college pliers. This form of the drug facilitates application in any location. The usual powdered form was found to be too readily washed out by saliva or blood.

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Report of Cases

CASE 1—The patient, a youth, aged 16, presented with an acute dento-alveolar abscess involving the two upper centrals and upper right lateral. The swelling was so large that it gave him a decidedly "dog-faced" appearance.

Examination—The upper lip was extremely swollen and the swelling extended up to the infra-orbital region, which made it difficult for him to open

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his eyes. The swelling extended laterally from the patient's nose in a straight line, so that it was difficult to ascertain just where the nose began. The upper right central was loose and pus exuded around it.

Treatment—The upper right central was extracted, a topical spray of ethyl chloride being used. A large amount of greenish-yellow pus was discharged. After a few minutes of drainage 7½ grains of granulated sulfanilamide were packed into the abscess cavity through the tooth socket. The patient was given a gauze pack to bite on, and was instructed not to remove the pack for half an hour. A mild saline cathartic was prescribed. Liquor sodii boratis compositus N.F. was prescribed as a mouth-wash. The patient was instructed to use one fourth of a glass, warm, as a mouth-wash once an hour starting three hours after leaving the office. Intermittent external applications of a cold pack to the face was ordered.

Course—When the patient was next seen, in twenty-four hours, most of the swelling was gone, except for a slight puffiness on the sides of the nose. A slight drainage was occurring. Sulfanilamide (7½ grains) was again packed into the abscess cavity. The patient was instructed to continue home treatment as ordered at the first visit.

When the patient was observed in forty-eight hours, the contours of the face were normal and drainage had ceased. Extraction of the upper left central and right lateral was advised.

Comment—In the internal use of sulfanilamide, saline cathartics are not used, because the sulphate radical may cause sulfhemoglobinemia.

CASE 2—A young woman, aged 25, presented with a pericoronitis involving the lower right third molar. Treatment was at first prescribed in the usual manner; that is, the patient was advised to apply cold packs externally over the affected area for twenty minutes; then to use half a teaspoonful of salt in a glass of warm water as a mouth-wash. Twenty minutes later this procedure was to be repeated. This treatment was continued for twenty-four hours.

When the patient returned the in-

(*Continued on page* 234)

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(*Continued from page 230*)

flammation had increased and a slight trismus was present.

Treatment—At this time a topical anesthetic was applied and the flap over the third molar was completely removed. The pocket distal to the third molar was packed with approximately 3 grains of granulated sulfanilamide, a gauze pack placed over the area, and the patient was instructed to bite on this for twenty minutes, and then to remove it carefully. Liquor sodii boratis compositus N.F. was prescribed as a mouthwash. The patient was instructed to use a fourth of a glass of the solution, warm, as a mouthwash every three hours, starting three hours after leaving the office.

Course—When the patient returned, in forty-eight hours, the trismus had disappeared, pain was absent, no inflammation was present and the area where the flap had been trimmed was healing normally.

CASE 3—A man, aged 34, presented with a large swelling in the lower right mandibular region.

Examination—Fluctuation was present and there was pointing in the mucobuccal fold next to the first molar. The molars were so carious that only the roots remained.

Diagnosis—A diagnosis of acute dento-alveolar abscess was made.

Treatment—An incision was made to institute drainage and a large amount of foul smelling pus was exuded. Sulfanilamide (7½ grains) was introduced into the wound and a gauze drain placed. The patient was instructed to apply cold packs externally in the region of the swelling. In forty-eight hours the swelling had subsided, and the gauze drain was removed. An inferior alveolar injection was given for anesthesia. The molar roots were removed and the wound carefully cleaned to remove all spicules and sharp edges of bone. Again, 7½ grains of sulfanilamide were placed. A sterile gauze pack was placed over the wound and the patient instructed to remove this in thirty minutes and not to use mouth rinses for three hours. Healing was uneventful.

CASE 4—A woman, aged 35, typically hypochondriacal, nervous and apprehensive, with a history of recent hysterectomy, had had an upper left first bicuspid and upper left lateral extracted. Three days later the patient returned complaining of considerable pain in that region.

Examination—The bicuspid socket presented all appearances of a dry socket, whereas the socket of the lateral appeared to be healing normally.

Treatment—The area was curetted slightly to promote the formation of a clot. Five days later the patient returned with the original complaint. The area of the lateral was also inflamed and painful at this time. Both sockets were thoroughly curetted, packed with about 4 grains of sulfanilamide, and three sutures were placed. The sutures were removed in four days. The gingiva in the region of the bicuspid was still a little sensitive, and butyn metaphen ointment was applied. The patient was again observed in three weeks when healing was found to have been uneventful.

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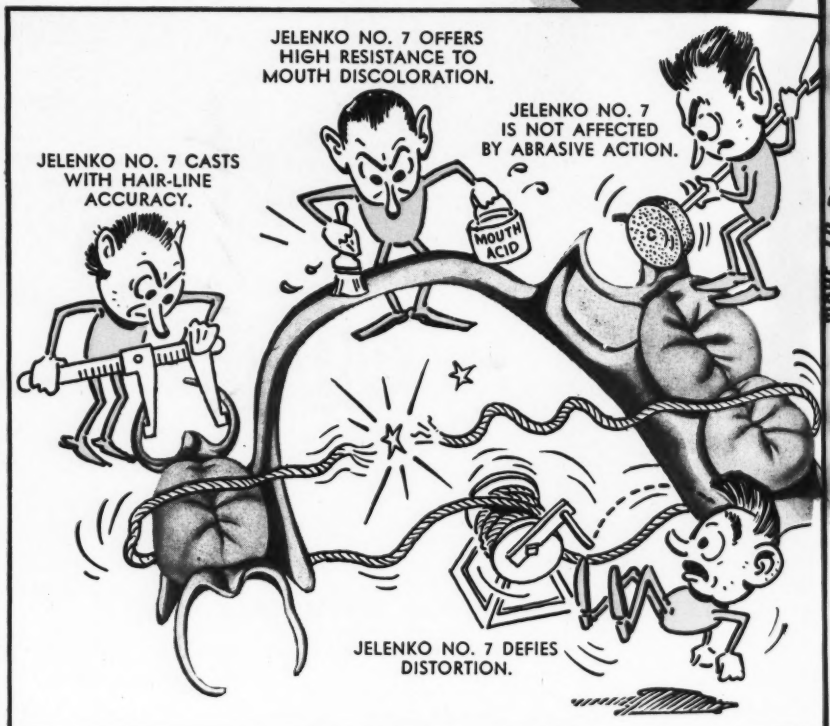
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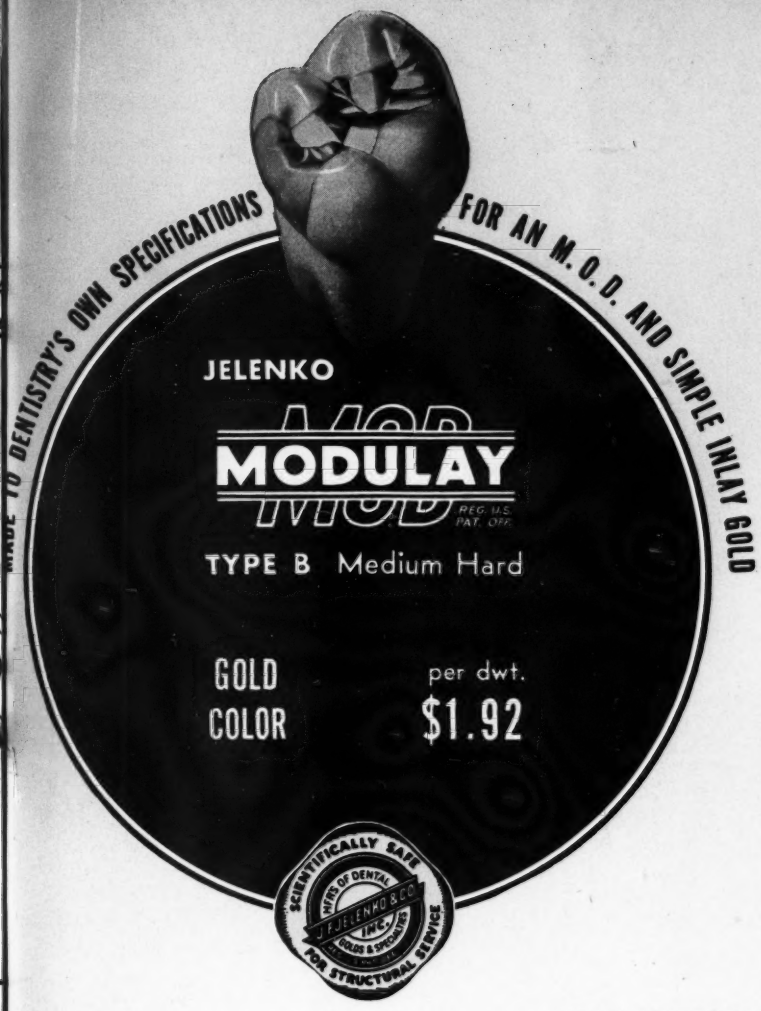

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Case 5—The patient, a woman, aged 55, was required the extraction of fifteen teeth.

First Extractions—The upper left lateral and first bicuspid and upper right first bicuspid were extracted; 2 grains of sulfanilamide were placed in each socket. The patient returned in three days having suffered no discomfort. At this time the lower right lateral and cuspid were removed and no sulfanilamide was introduced.

Second Extractions—The patient returned in three weeks saying that she had not been back sooner because the area where the lower teeth had been removed had been painful. The upper left central and upper right lateral and cuspid were extracted at this visit. I had intended to dismiss the patient without applying sulfanilamide but she requested that I use the white powder that I had applied after the first extractions because that time she had no painful after effects. Approximately 5 grains of sulfanilamide were placed.

Final Extractions—The patient returned in seven days having had no postoperative pain and the area had healed. At this visit the upper left cuspid and second bicuspid were extracted and also the upper right first and second molars. The alveolar process was trimmed in these areas, 5 grains of sulfanilamide were inserted, and three sutures placed. The sutures were removed four days later. There was no complaint of postoperative pain. The areas where sulfanilamide had been used healed more quickly than those without.

Case 6—A man, aged 40, who had been wearing a full upper denture for several years presented with a fistulous opening in the upper right cuspid region from which pus was exuding. The patient wanted the area cleaned but wanted no anesthetic.

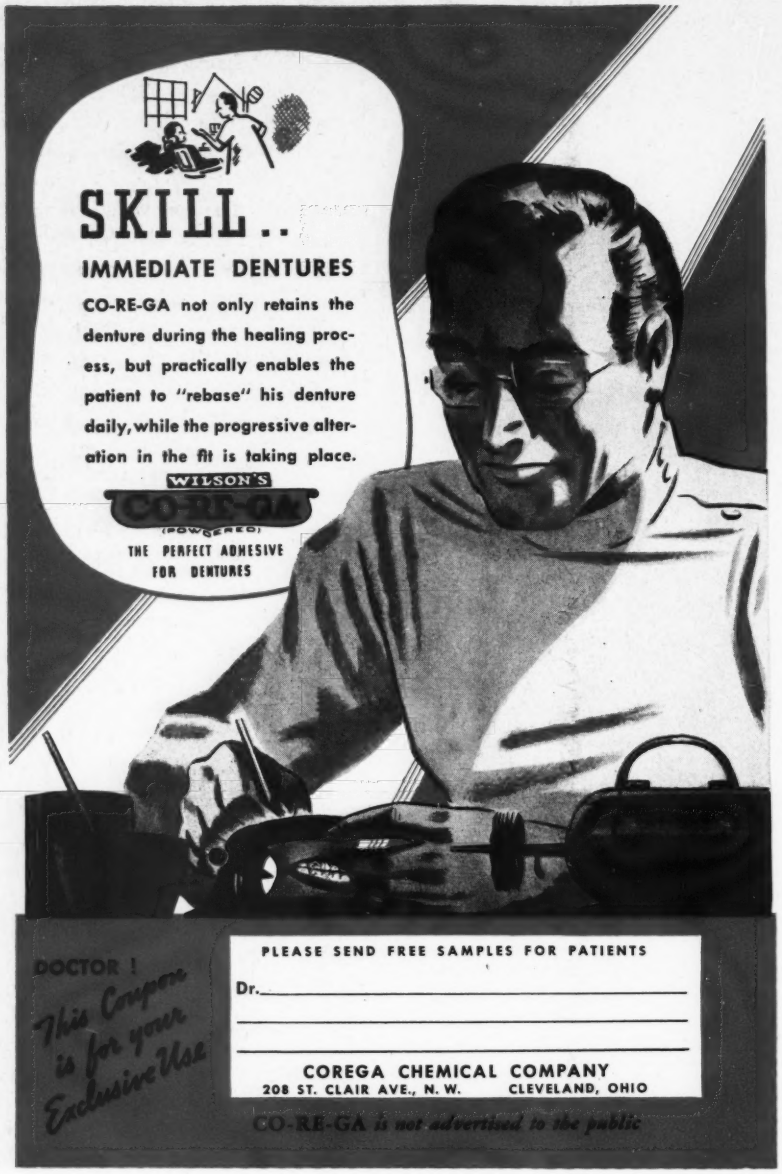
Treatment—A flap was laid back and the roots of the upper right lateral and cuspid were discovered in the center of an abscess about half an inch in diameter. The roots were removed, the area carefully curetted, and 7½ grains of sulfanilamide were inserted into the cavity. One suture was placed. The patient was instructed to insert his upper denture and not to remove it until the following morning.

Course—In four days the suture was removed. Healing was uneventful.

Case 7—A man, aged 38, presented with an acute dento-alveolar abscess in the region of the upper right second bicuspid. The tooth was extracted after infiltrating the lingual nerve with procaine hydrochloride. An anesthetic was not injected in the region of the swelling; 3 grains of sulfanilamide were placed in the socket. The patient was instructed to apply cold packs to the face and to use a small amount of hot salt and water as a mouthwash, starting three hours after the operation. When the patient was seen in four days, the swelling had subsided and the area was healing normally.

Case 8—A woman, aged 42, presented with a history of having severe postoperative pain following past tooth extractions.

Examination—There was apical involvement of the upper right cuspid, bi-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cuspids, and first molar. Extraction was advised.

Surgery—The four teeth were extracted at one visit and an alveolectomy was performed in that region. Approximately 4 grains of sulfanilamide were introduced into the sockets and one continuous suture and one interrupted suture were placed. The patient was instructed not to rinse her mouth until the following morning and then to use warm salt and water.

Course—The patient was seen in four days when the sutures were removed. Healing was occurring by primary intention. The patient had experienced slight postoperative soreness, but she said that the pain was not at all comparable to past experience. The patient was seen again in a week and the only area of soreness present was in the region of the upper right cuspid where there was a roughness in the alveolar process.

CASE 9—A young man, aged 20, presented with impactions of both lower third molars. The right molar was impacted completely in tissue and partly in bone; the left molar was completely impacted in bone. Both were removed under inferior alveolar anesthesia with an interval of one week between extractions. The socket of the lower right third molar was treated with 4 grains of sulfanilamide, and two interrupted sutures were placed. The socket of the lower left third molar was treated with 7½ grains of sulfanilamide. Three interrupted sutures were placed. The ends of the incisions, left open for drainage, granulated satisfactorily, and the sutured portions healed by primary intention. On both sides postoperative soreness was slight and there was no swelling.

In my opinion, based on the results of the cases reported here and twenty-five additional cases with similar results, the local use of sulfanilamide is indicated following the extraction of infected teeth. To be sure, it is impossible to obtain a true control, but in comparison with similar cases in which sulfanilamide was not used, healing seemed to be more rapid, and postoperative pain, swelling, and drainage were less.

89 *Main Street.*